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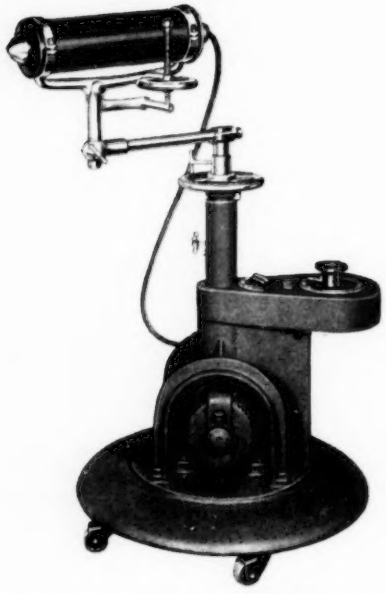

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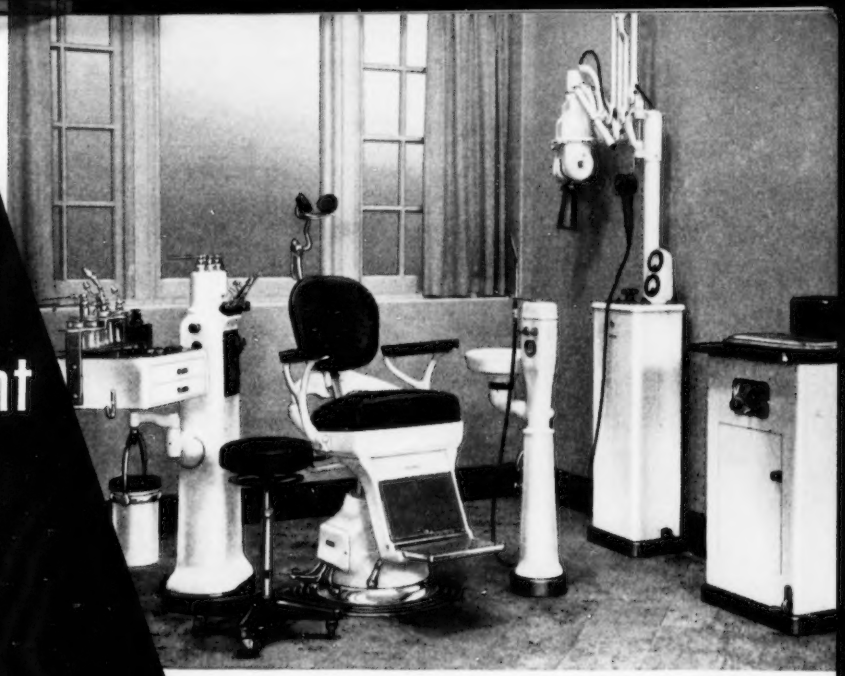

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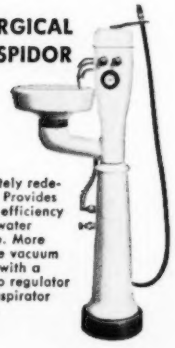

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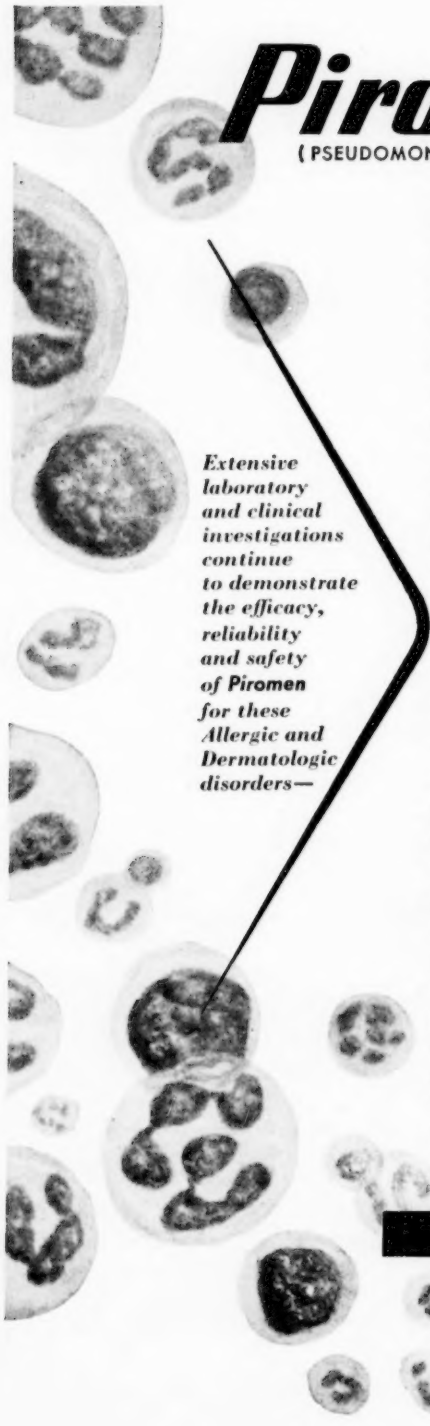

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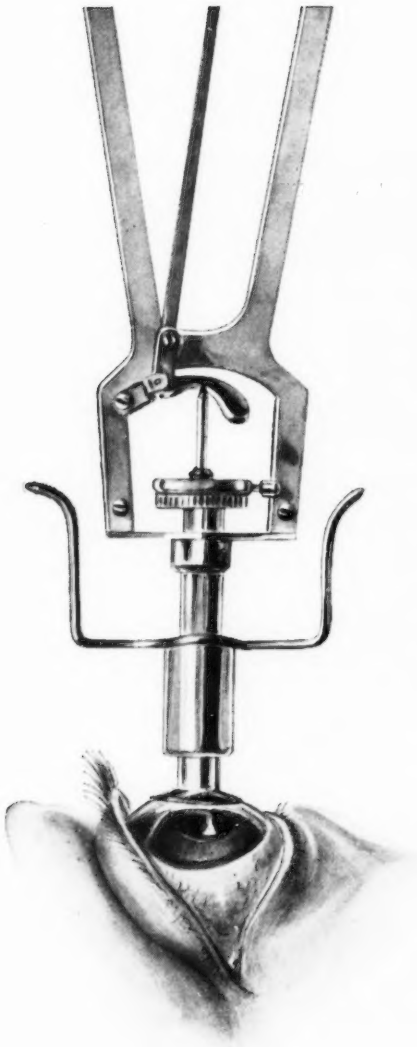

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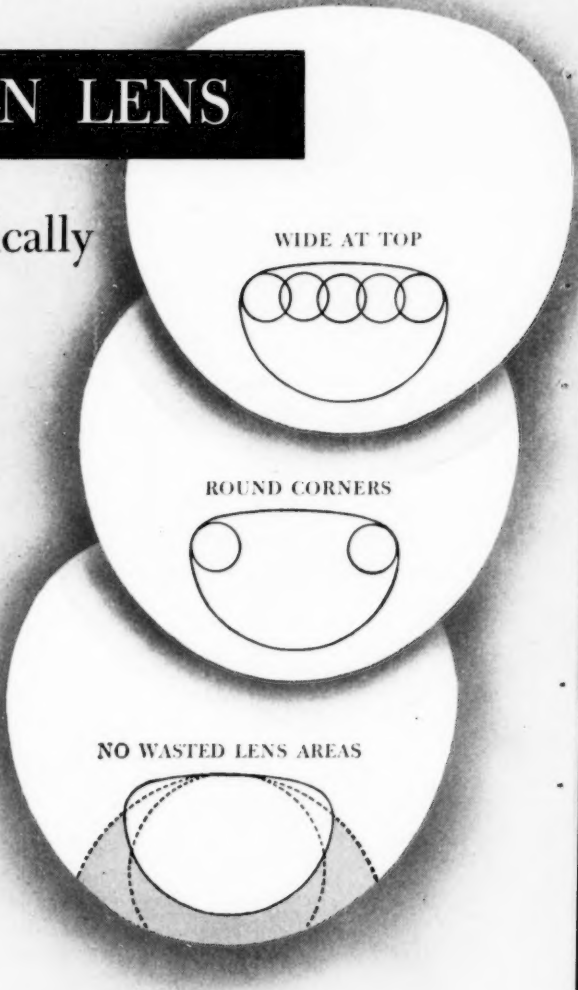

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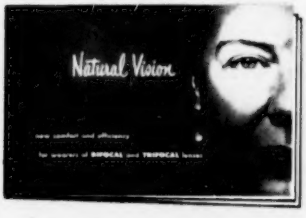

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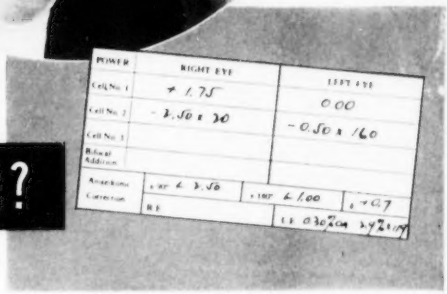

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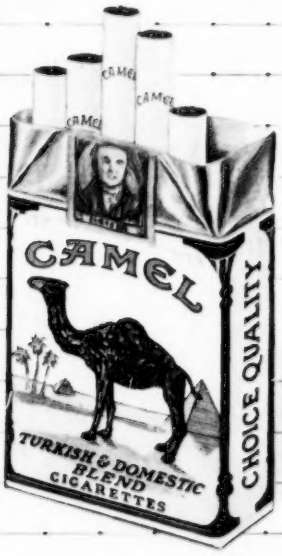

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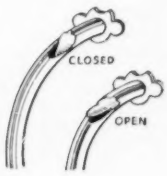

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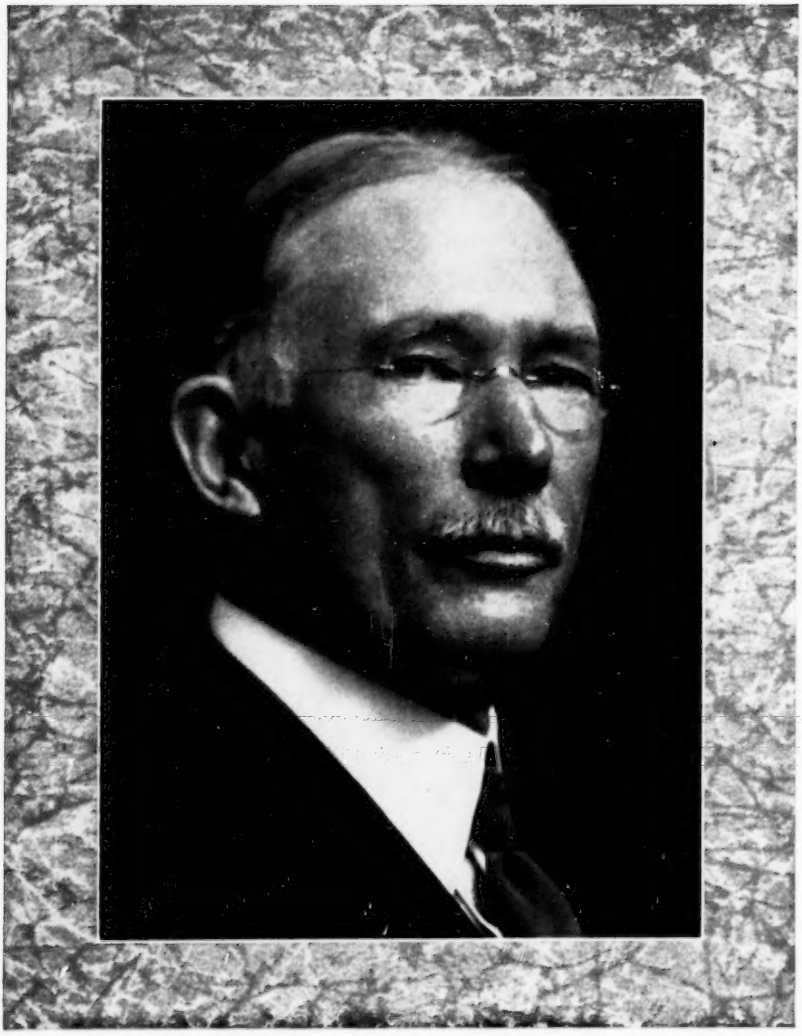

WALTER BRACKETT LANCASTER

1863 - 1951

A TRIBUTE TO WALTER B. LANCASTER

JAMES J. REGAN, M.D.
BOSTON, MASS.

THE VEHICLE chosen by the American Academy of Ophthalmology and Otolaryngology to honor the memory and acknowledge the pioneering efforts and contributions of the late Dr. Walter B. Lancaster, of Boston, to the progress of American ophthalmology, seems singularly appropriate. It can be said of him that despite his accomplishments in many branches of his chosen specialty, he dedicated his life to problems of ocular motility.

He credited Mauthner, of Innsbruck, with planting the seed when, following his graduation from Harvard Medical School in 1889, he studied in Europe. Mauthner, he said, was a master of refraction, motility, and neuro-ophthalmology, and during much of the time he was his only pupil.

About 1910 he was assigned a room at Harvard Medical School where he set up some simple laboratory apparatus and gave a course in physiological optics.

He dared contribute to the *Boston Medical and Surgical Journal* a paper entitled, "A Suggestion for Improving the Training of Ophthalmologists," which was published in the Journal, April 17, 1913.[1] In it he points out that while anatomy and pathology were then being taught in the medical schools, "quite the reverse is true of physiology. The whole field of physiological optics is terra incognita to the medical student." He said, "that part of ophthalmology which is not found in any other branch of medicine is — physiological optics."

His paper, entitled, "Certain Anatomical and Physiological Considerations Bearing on Heterophoria," read before the Eye, Ear, Nose and Throat Section of the Southern Medical Association, November 13-16, 1922,[2] amounted to a debate between Savage and Lancaster, with Tom Williams acting as judge, and rendering a decision in favor of Lancaster with these words: "I must say that as a neurologist, Dr. Lancaster's thesis appeals to me much more than does that of Dr. Savage. It seems to me it (heterophoria) is a neurological problem rather than one of the mechanical positions of the muscles."

Lancaster, closing the discussion, said in typical Lancasterian manner, "Of course, my object in presenting this paper was not to express my personal views, but rather to emphasize certain points which seem to me to be commonly misunderstood and misrepresented. The statements I have made I believe to be all thoroughly established and accepted by the best authorities. Anyone offering other views must furnish proof; mere assertion is not sufficient."

In the President's Address, at the Academy meeting in Montreal in 1924, Lancaster proposed that from the funds of the Academy a fellowship be established for the study of physiological optics.

His well-documented paper entitled "The 'All or Nothing' Principle of Nerve Conduction and Muscle Contraction," presented before the Section of Ophthalmology of the American Medical Association in 1923, stamped him as a keen and courageous scientist.

His evaluation of various tests for "Detecting, Measuring, Plotting and

Presented at the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

Interpreting Ocular Deviations,"[3] with presentation of his Red-Green Test further indicates his continued desire to improve and simplify the understanding and technics of this important branch of ophthalmology.

In 1934, Lancaster introduced Professor Alfred Bielschowsky, of Breslau, Germany, to Professor Adelbert Ames, at Hanover, New Hampshire. This meeting resulted in Bielschowsky coming to Dartmouth to work with Ames and his associates, where, as Professor of Ophthalmology and Director of the Dartmouth Eye Institute, he worked until his death in 1940. Lancaster said of him, "His special studies and experience in the field of motor anomalies, and the physiology and pathology of binocular vision, made him peculiarly fitted to appraise the work of Ames and his coadjutors." Bielschowsky's lectures and demonstrations in numerous ophthalmic centers throughout the country gave new impetus to study and research in this field.

When the rank and file of ophthalmologists were confounded by claims of superior results of "eye exercises" over the existing medical and surgical routines, Lancaster in 1944 wrote on the "Present Status of Eye Exercises for Improvement of Visual Function,"[4] which, to most of us, was reassuring.

His faith in orthoptics was strong enough to inspire his only child, Miss Julia Lancaster, to devote her life to the work. He established the first Basic Course for Orthoptic Technicians in 1948, and he contributed the spark which brought about the first grand symposium on strabismus held at Iowa City in 1949.

It is regrettable that his crowning achievement, a textbook on refraction and ocular motility, did not appear until two months after his death.

This brief tribute to a great teacher will be followed by a galaxy of stars who, I am sure, will give testimony to his influence — some intimate, some remote — upon their urge to lead us out of the morass of confusion and along the broad highway of truth and scientific knowledge to a better understanding of strabismus.

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Symposium: Strabismus

INTRODUCTION — THE NATURE OF NORMAL BINOCULAR VISION

KENNETH C. SWAN, M.D.
PORTLAND, ORE.

IT HAS been the purpose of this panel to organize and present those facts about strabismus which seem established and clinically important. It has not been our intention to discuss contemporary theory or controversial issues; rather, we have hoped that points of agreement between representatives of different sections and schools of thought would provide a summary of fundamental knowledge of strabismus. This will serve as a foundation for future symposia of more limited scope.

The panel has met on five occasions and exchanged views on nearly every phase of the subject. Until his untimely death in June 1952, Dr. Richard G. Scobee of St. Louis was an enthusiastic member who contributed much to the discussions. He was assigned "Methods of Examination," and contributed valuable data concerning the reproducibility, validity, and practicality of various diagnostic measures. The symposium will include many of his views on this as well as other subjects.

Time limitations have made it impossible to refer to the many important contributors to our knowledge of strabismus; however, it seems proper that this symposium be dedicated to Dr. Walter B. Lancaster. He was instrumental in arranging for it and prior to his death gave helpful advice concerning its organization. It was upon his recommendation that we chose to introduce the symposium with a summary of normal binocular vision and methods of studying it for anomalies. Then pathologic physiology and some clinical findings will be presented; however, it is our opinion that a precise classification of strabismus is not feasible at present. Also, following the advice of Dr. Lancaster, specific rules of diagnosis and treatment will not be recommended; rather, it is hoped that by providing the ophthalmologist with a rational approach to this subject, we can make it possible for him to enlarge his knowledge in an orderly manner and thereby improve his methods of managing individual patients. Fortunately, the Instruction Courses offered by the Academy cover most aspects of strabismus in considerable detail.

In normal binocular vision, there occurs a cerebral integration of the visual sensations of the two eyes into a single mental impression. This process is spoken of as "fusion." To explain its mechanism and variations in strabismus, it is necessary to review some characteristics of monocular visual sensations, particularly their directional values.

If some rays of light strike a retinal area in one eye of an individual, he not only perceives a light sensation, he is also aware of the direction of its origin. Furthermore, if in the same eye two retinal areas are stimulated simultaneously, the observer will be aware of

From the Department of Ophthalmology, The University of Oregon Medical School, Portland, Oregon. Presented at the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

two distinct sensations of light, each seeming to come from a different direction and separated in accordance with the relative anatomical location of the stimulated rods and cones (fig. 1). Stated otherwise, every retinal area normally has an inherent and constant directional value in relation to every other retinal area in the same eye. Thus, sensations of direction permit us to determine the relationship of objects in space to each other independently of our own position.* This relationship is altered if a Maddox double prism is placed before one eye. Then rays of light from a single object in space are divided and made to fall upon two different retinal areas in the same eye. As these areas have different directional values, the object is seen in two directions, that is, doubled. This is the mechanism of monocular diplopia of physical origin. It illustrates the fact that for an object in space to appear as single, it must be seen in only one direction. Cerebral integration of sensations of direction from the two eyes, therefore, is the essence of binocular single vision. How does it occur?

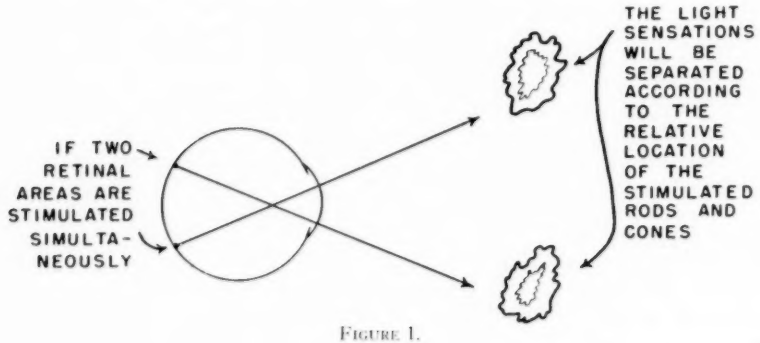
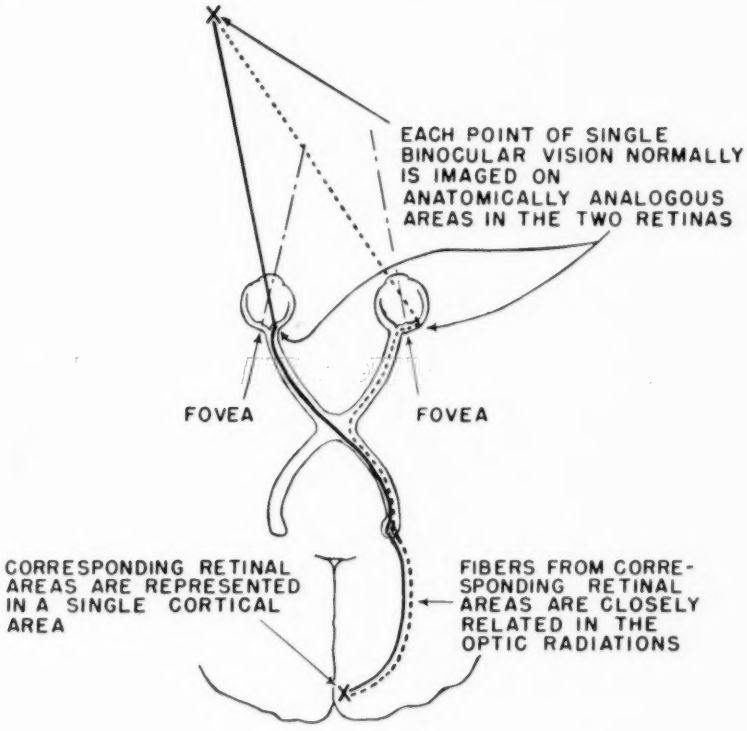

IF TWO RETINAL AREAS ARE STIMULATED SIMULTA-NEOUSLY
THE LIGHT SENSATIONS WILL BE SEPARATED ACCORDING TO THE RELATIVE LOCATION OF THE STIMULATED RODS AND CONES

FIGURE 1.

In relation to sensations of direction, the two retinas normally are functional counterparts, that is, anatomically corresponding areas in the two retinas such as the left halves of the two foveas have a common visual direction. If the two foveas are stimulated simultaneously by mechanical or other means, the sensations from the two eyes appear superimposed. This occurs even though the visual axes may be widely misaligned at the time of the stimulation. This fact can be demonstrated with foveal afterimages and is the basis for the well-known "afterimage test" for determining the state of retinal correspondence. In summary, it can be said that normally there is a correspondence between the anatomy of the two retinas, including their central connections, and their function in relation to sensations of direction. The normal anatomy of the visual pathways and their central representations provide some basis for normal retinal correspondence (fig. 2).

This normal correspondence between function and anatomy permits the major parts of the field of vision of the two eyes to be superimposed without conflict. For a given distance of bifoveal fixation, it is possible to localize a frontal plane (horopter) from which all rays of light

* Additional factors are concerned in visual orientation of the individual to his surroundings.


EACH POINT OF SINGLE BINOCULAR VISION NORMALLY IS IMAGED ON ANATOMICALLY ANALOGOUS AREAS IN THE TWO RETINAS
FOVEA
FOVEA
CORRESPONDING RETINAL AREAS ARE REPRESENTED IN A SINGLE CORTICAL AREA
FIBERS FROM CORRESPONDING RETINAL AREAS ARE CLOSELY RELATED IN THE OPTIC RADIATIONS

THE NORMAL ANATOMICAL RELATIONS OF FUNCTIONALLY CORRESPONDING RETINAL AREAS

FIGURE 2.

would fall upon functional corresponding areas in the two eyes. Objects lying upon this horopter appear to be single because they are seen in the same direction by the two eyes; however, it is found that an object may be slightly in front of or behind the horopter and still not appear as doubled. This zone of single binocular vision has come to be spoken of as "Panum's fusional space" (fig. 3). Objects lying anywhere in this fusional space will be seen as single, but if they are visualized by slightly disparate retinal areas, their directional values may be slightly altered. Temporal disparity creates the perception that an object is nearer than the point of fixation whereas nasal disparity gives rise to the impression that the object lies beyond the point of fixation. A type of three-dimensional vision (stereopsis) is thereby made possible.

Panum's fusional space also makes fusion possible without exact intersection of the visual axes at the point of fixation. This phenomenon may occur without suppression of any part of the visual field and is known as "fixation

disparity." The maximal magnitude of deviation compatible with a single binocular vision is seldom greater than a few prism diopters when bifoveal perception is present because Panum's fusional space is shallow in the fixation area. Correspondence between function anatomy is, however, less exact in the peripheral fields of vision. In the presence of a central suppression scotoma in one eye, a type of binocular single vision (peripheral fusion) is possible even when the visual axes are deviated grossly. Dr. Burian will point out that this may occur in strabismus, that is, children with the common tropias of childhood are not entirely "one-eyed."

Normal retinal correspondence is essential for normal binocular single vision but the two should not be considered synonymous. For fusion to occur, useful but not necessarily normal vision must be present in each eye, that is, binocular vision must be possible. Furthermore, functionally corresponding retinal areas in the two eyes must receive similar patterns of stimulation.*

Normally, the two eyes function approximately the same as optical instruments; consequently, if both eyes are fixating the same object, similar patterns of light necessarily will be focused upon corresponding areas in the two retinas. It must not be assumed that the images must be exactly alike. Some variation in size and other characteristics of the two retinal images, such as occur with mild degrees of anisometropia, seems compatible with binocular single vision.

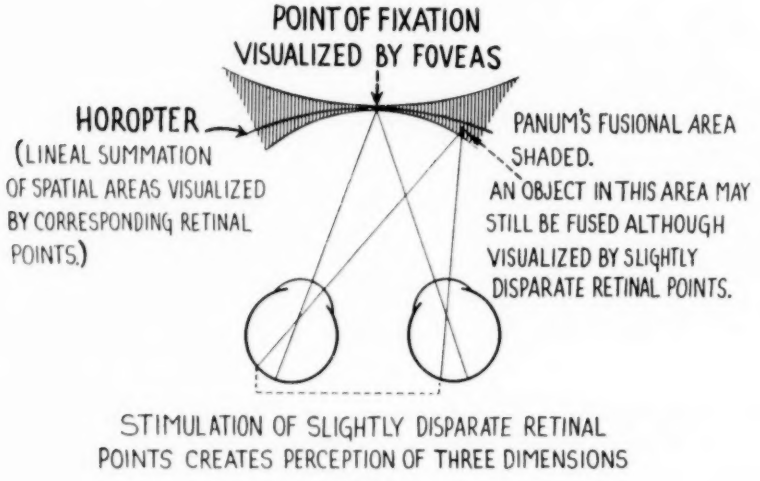


FIGURE 3.

Useful vision in each eye and simultaneous binocular perception are not synonymous terms because varying degrees of binocular awareness exist in anomalies of binocular vision. A high degree of simultaneous binocular aware-

* If dissimilar images are seen by the two foveas, they appear superimposed as a confused pattern or there occurs a rather rhythmical dominance of first one and then the other image (retinal rivalry).

ness is essential for normal fusion. It is obligatory in normal adults, for they cannot will to see entirely with one eye; however, visual impressions from one eye may be dominant. This dominance may be enhanced by attention. Furthermore, when a stimulus to the two eyes is not equal, dominance of one eye may then result in almost complete loss of awareness of sensations from the other eye. This physiologic suppression is well illustrated by monocular microscopy or ophthalmoscopy conducted with the nonfixating eye open.

We habitually concentrate our attention on the center of our field of vision (zone of regard), possibly because ability to discriminate between two small objects is better than in the periphery. The relatively poor acuity and low degree of awareness in our peripheral fields of vision serve useful purposes. In everyday life, some objects invariably are in front of or behind Panum's space and therefore are imaged on noncorresponding areas in the two retinas. Only by concentrating attention on these areas are we aware of seeing these objects doubled (physiologic diplopia). In fact, if malalignment of the visual axes occurs, we are not aware of diplopia in our peripheral fields. It can be said, therefore, that a high degree of simultaneous binocular perception occurs only in the central fields of vision.

To have a high degree of visual discrimination in either eye, we must concentrate our attention on the object of regard, that is, we must "look to see." Adults seem able to fixate attention on only one area at a time, while small children may not be capable of visual attention while concentrating on a sound, tactile or taste sensation. During such circumstances they may seem almost "blind to the world" and may not be aware of a wide deviation of their visual axes. Deviations of visual axes in a "day dreaming" child are not necessarily abnormal. They illustrate the facts that simultaneous binocular perception is essential for fusion but that it requires a certain amount of attention (fixation) on the object of regard.

In summary, the four sensory components essential for normal fusion are useful vision and similar images in each eye, normal retinal correspondence, and a high degree of binocular awareness in the central field of vision. These seem to develop to a high degree when anatomy and innervation of the motor system are normal and provide the opportunity. For example, the normal position of the globes in the orbit is such that when an infant fixates distant objects with one eye, his visual axes are approximately parallel. As a result, anatomically corresponding areas in the other eye receive the same pattern of stimulation and have an opportunity to establish functional correspondence. Approximate parallelism, or rather the absence of an appreciable deviation of the visual axes, is therefore essential, if a normal fusion mechanism is to develop early in life.

As an infant matures, his visual acts become increasingly dynamic in accordance with the widening scope of his interest and activities. Assuming that his visual axes are approximately parallel for distant gaze, his motor system must be able to fulfill at least three general functions to permit the sensory act of fusion to develop and function under all circumstances.

First, the intraocular muscles must make the eye function well as an optical instrument. Clear vision is thereby possible at varying distances of fixation and certain refractive errors are corrected, at least in part. A second oculomotor function is to shift the visual axes to each new object of interest so that it is visualized by the fovea and seen most distinctly. A stimulus to these move-

ments may arise from the peripheral retina of either eye, from some sensory organ, or even be voluntary. In any event, the response is normally a conjugate and comitant version of the eyes.

A third function of the motor system is to bring the visual axes to intersect at or near the point of attention; thereby rays of light from the object of regard are made to fall upon corresponding retinal areas in the two eyes. This function requires disjunctive movements which are called vergences. These include convergence, divergence, vertical vergence and cyclovergence. These controlled disjunctive movements make fusion possible at all distances of fixation. For this reason, vergences are sometimes spoken of as fusional movements.

The major stimulus to the finer fusional movements seems to arise from slight disparity outside of Panum's fusional space. In fact, gross disparity may provide little or no stimulus. This physiologic fact may contribute to the maintenance of a wide deviation of the visual axes in the early stages of strabismus. Disparity in the extrafoveal areas seems a particularly effective stimulus, but the peripheral and very center of the field of vision are also contributory to the maintenance of proper alignment. The amplitude of convergence movements normally is greater than those of divergence. Vertical vergence movements are quite limited in normal individuals. The amplitude of fusional movements may be increased with orthoptic training and may be found to be decreased if fusion has been disrupted for a prolonged period of time.

The components essential to binocular single vision are summarized in table I. Determination of their status seems the major objective in examination of a patient suspected of having an anomaly of binocular vision. This is so because normalization of these components is the goal of treatment.

TABLE I

COMPONENTS OF NORMAL BINOCULAR VISION

I *Sensory*
1. Useful vision.
2. Similar images in each eye.
3. Normal retinal correspondence.
4. Simultaneous binocular perception.

II *Motor*
5. Approximate parallelism of visual axes (distant fixation).
6. Full rotations and comitant versions.
7. Ample fusional movements.
8. Accommodation—vergence coordination.

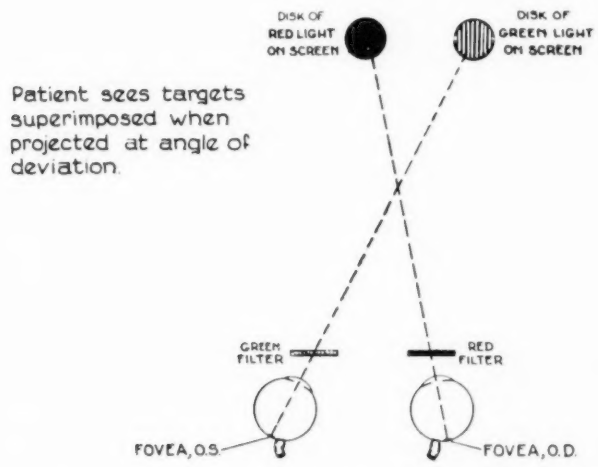
Anomalies of binocular vision are so complex and the circumstances vary so markedly with individual patients that it is not possible to recommend a specific routine of examination or a certain battery of tests to be used with every patient. On the other hand, studying the status of the components of binocular single vision must not be considered to constitute the entire examination or even the first step; rather, their investigation should be considered as a basic objective. A history and the determination of the presence or absence of diseases of the eye or visual pathways along with general appraisal of the patient are prerequisites.

The sensory components of binocular vision generally are investigated first. The presence or absence of useful vision and similar images in the two eyes is determined concurrently with measurement of the refractive error. Where there is a gross anisometropia, a significant dissimilarity in images in the two eyes can be expected. In infants and small children, dependence must be placed upon objective methods of examination but so much can be learned that examination should not be deferred until subjective tests are possible. Even determination of the ability of an infant to maintain foveal fixation is significant.

Demonstrating that the two foveas have a common visual direction is prime

evidence of normal correspondence. Methods will be discussed by Dr. Burian. The presence or absence of a normal degree of simultaneous binocular awareness in the central fields of vision can be determined by simple office tests. Red and green or polaroid filters, or haploscopic devices can be used to partially separate the stimuli to the two eyes. The Worth four-dot test and polaroid vectographs are most commonly used. Some objective evidence of the presence or absence of bifoveal perception can be determined with the cover and uncover tests. If no deviation is present when fusion is disrupted by covering one eye, it can be created by holding a small prism horizontally over one eye. Then one eye is covered and uncovered to see if the deviation is overcome by a fusional movement. If the patient is unaware of diplopia and the deviating eye does not move, binocular awareness can be assumed to be deficient. In evaluation of this test, the possible existence of a few diopters of fixation disparity must be considered.

In the study of the motor components of normal binocular vision, the technic of testing depends upon the age of the patient and other circumstances of the individual case. A first step is to determine the presence or absence of a deviation; that is, whether an approximate parallelism of the visual axes exists when one eye is fixating a distant object. There are a variety of objective and subjective methods of measuring deviations. In the subjective methods, the stimulus to fusion is disrupted either by presenting dissimilar images to the two eyes, for example, by the Maddox rod, or by creating diplopia with a vertical prism. The deviation then is measured either by prisms or on a tangent screen. Filter-twin projection systems, such as the Lancaster Red-Green test, have a distinct advantage over the Maddox rod


DISK OF RED LIGHT ON SCREEN
DISK OF GREEN LIGHT ON SCREEN
Patient sees targets superimposed when projected at angle of deviation.
GREEN FILTER
RED FILTER
FOVEA, O.S.
FOVEA, O.D.

USE OF RED–GREEN FILTER PROJECTION SYSTEM TO DETERMINE DEVIATION. NORMAL CORRESPONDENCE.

FIGURE 4.

for subjective measurements in small children because no description is necessary. The examiner can observe the degree of separation of the projected images upon a calibrated tangent screen (fig. 4).

It should be emphasized that the stimulus to fusion is blocked to varying degrees by the different tests. Also, other factors, such as accommodative effort or the optical illusion of nearness, may influence the magnitude of the deviation. There is, therefore, no test which is best for measuring the deviation under all circumstances. Dependence on one method to the exclusion of all others is an error.

Objective measurement of the deviation is possible by a number of technics but most are based either upon measurement of displacement of the light reflection on the cornea or measurement of the amount of movement that a deviated eye makes to take up fixation when the other eye is covered.

Measurement of a displaced corneal reflection is possible by simple estimation, by use of prisms to correct the displacement, or with a Priestley Smith tape or perimeter. Measurement of the movement of the deviating eye to take up fixation is commonly performed with some type of cover and a prism. The "cover test" is in general more accurate than observation of displacement of the corneal reflections and can be used more readily in the extreme fields of gaze and at varying distances of fixation.

Scobee has pointed out that measurements made on haploscopic devices, such as the major amblyoscope, are apt to err toward the eso side because these instruments give the patient a sensation of nearness; however, they have one important advantage, the objective and subjective measurements of the deviation can be made simultaneously and compared — a matter of great importance in determining the status of retinal correspondence. Also, these instruments permit the examiner to vary the type, intensity, and frequency of the light stimulus to the two eyes.

A second phase of study of the motor components of binocular vision is to determine whether the amplitude of vergence movements is adequate to overcome the deviation and still have ample reserve to permit bifoveal fixation in various fields of gaze and particularly at varying distances of fixation. This is the purpose of prism vergence measurements. The patient is asked to fixate a distant object and prisms of increasing size are placed over one or both eyes until diplopia is created.* It is important after diplopia is created to reduce the amount of prisms until a recovery movement takes place. The amplitude of fusional movements also can be measured on haploscopic devices, such as the major amblyoscope or the prism stereoscope.

Full and comitant ocular rotations constitute a third motor component of normal binocular single vision. Simple observation of the patient's versions will reveal only gross incomitance or limitation of ductions. Actual movements of the two eyes can be accurately recorded by ophthalmographic tracings or on a slow-motion cinema, but at present, measurement of alignment of the two eyes in the various diagnostic fields of gaze is much simpler and requires no special apparatus. This can be performed objectively with the cover test or subjectively by plotting diplopia fields or red-green fields by the Lancaster technic. Later, the significance of these measurements will be discussed by Dr. Brown.

* It is desirable for the examiner to watch the patient's eyes to be certain that vergence movements actually take place.

Study of the function of the intraocular muscles constitutes a final phase of examination of the motor system. It involves more than measurement of the refractive error and determination of the amplitude of accommodation. The relationship of accommodative and vergence mechanisms also must be determined. The effort of accommodation is associated with the stimulus to converge. The converse is also true. The influence of accommodative effort or the lack of it can be determined at least in part by comparison of the deviations of the visual axes for both distant and near fixation with fusion disrupted. If a refractive error is present, the deviation should be measured with and without glasses. Determination of the influence of vergence movements on accommodation also can be determined but requires the presence of binocular single vision. Then, prism vergence measurements are made with the patient accurately fixating and accommodating on a near object. In this technic, blurring of the image is the end point rather than diplopia. The blurring of the image means either stimulation or inhibition of accommodation.

In the above discussion, the components of normal binocular vision have been reviewed and methods of studying them have been discussed. What occurs if one or more of the components are deficient or absent? In the adult, if some factor other than severe visual impairment results in misalignment of the visual axes, certain symptoms develop because the adult cannot will to see with only one eye. The object of regard is visualized by the fovea of one eye and an extrafoveal area in the deviating eye (fig. 5). These are not functionally corresponding points; therefore, the object of regard is seen in two directions, that is, doubled. Generally, the patient is not aware of diplopia in the peripheral field.

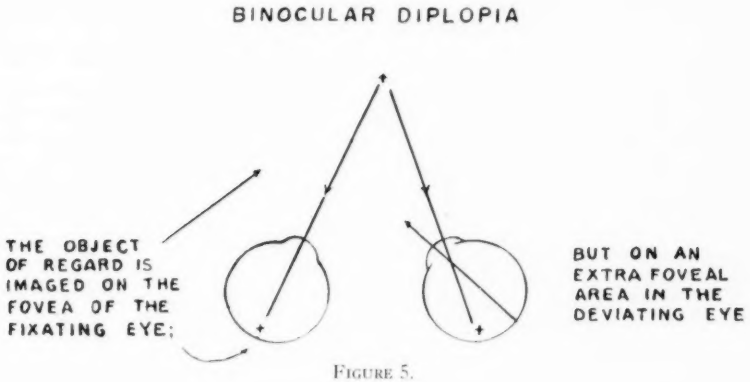

BINOCULAR DIPLOPIA
THE OBJECT OF REGARD IS IMAGED ON THE FOVEA OF THE FIXATING EYE;
BUT ON AN EXTRA FOVEAL AREA IN THE DEVIATING EYE

FIGURE 5.

Diplopia is not due to the two foveas viewing different objects in space. This produces a different kind of symptom. It has been mentioned that we are able to fixate attention on only one area at a time; if a deviation is present, we, therefore, have to choose one eye to fixate the object of interest. The foveal image of the deviating eye then may appear superimposed on this object causing some confusion of detail. This "confusion of images" is seldom as annoying or as persistent as diplopia.

If normal binocular vision is impossible in an infant or young child, different circumstances prevail. If the handicap is sensory, such as impaired vision in one or both eyes, he will lack the stimulus to develop fusional movements. Exact alignment of his visual axes is then unnecessary and a deviation may develop in accordance with anatomical, refractive, or other factors. On the other hand, if there is an anatomical, optical or innervational abnormality, the opportunity for establishment of normal binocular vision is lacking. Furthermore, certain adaptive mechanisms develop. These include suppression, abnormal retinal correspondence, blind spot mechanism, and others. These permit the child to develop some degree of binocular single vision, at least in his peripheral fields (peripheral fusion). As a result, he has little functional disability and is free of symptoms but retains the cardinal sign of strabismus, a manifest deviation. How such a child sees, that is, the nature of vision in strabismus, now will be presented by Dr. Burian.

Symposium: Strabismus

ADAPTIVE MECHANISMS

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PATIENTS with concomitant strabismus present not only a misalignment of the visual axes, but also certain well-defined abnormalities in their sensory visual system, such as suppression, amblyopia ex anopsia and anomalous correspondence.

These sensory anomalies appear to be the consequence of the misalignment of the visual axes and afford the organism certain advantages. One can, therefore, consider them to be phenomena of adaptation of the sensory system to the altered conditions in the motor system. To be sure, it is well known that sensory abnormalities may, under certain circumstances, cause a strabismus, as will be shown by Dr. Adler, and the possibility cannot be entirely excluded that motor and sensory anomalies in strabismus are the result of a common cause and that there is an instability in the visual system of patients with strabismus which makes them more prone to develop sensory anomalies. Also, the sensory difficulties may persist if the eyes have been straightened. Nevertheless, for practical purposes it has proven convenient to think of these sensory anomalies in terms of phenomena of adaptation, and they will be treated as such in this presentation.

To ensure survival and adequate functioning of the organism, proper balance must exist between the stability of function of the individual organs and the adaptability of the organism to changes in its internal and external environment. In higher animals the central nervous system controls this adaptability. The eye, with its retina and optic nerve, is not a peripheral organ in the strict sense of the word. It is an outpost of the central nervous system. Thus it is not surprising that provisions are made to adapt the visual organ to varying conditions of use and to changes in its surroundings. Provisions are made to ensure distinct vision at varying distances of fixation; provisions are made to vary the amount of light admitted to the eye and to adjust the sensitivity of the eye to different levels of illumination. In the optomotor reflexes we have, as Dr. Adler will explain, a delicate set of reflexes by which the tonic innervation of the ocular muscles is constantly adjusted to ensure the proper relative position of the eyes.

The great biologic significance of the ability of the visual system to adapt itself to altered circumstances becomes particularly evident when there is a relative deviation of the visual axes. That the changes then encountered are the result of adaptive processes is emphasized by the fact that no new qualities are added to the act of vision in patients with strabismus. The physiopathologic changes in the visual act of these patients are aberrations of normal processes, and they are all preformed in the normal act of vision. Thus suppression is preformed in retinal rivalry. The

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marked lateralization of vision in some normal individuals (the "dominance" of one eye) is a precursor of uniocular strabismus. The shift in visual directions characteristic of stereopsis is a forerunner of the more extensive shift which takes place in anomalous correspondence.

The goal of the changes which the visual act undergoes in strabismus is twofold. One which is fully achieved is the avoidance of confusion and diplopia; the other which is only partially reached is the restoration of binocular vision. The intricate mechanisms which are set into action for the purpose are entirely subconscious and are automatically put to use. They include not only suppression and anomalous correspondence, but also such adjustments as the blind spot mechanism and abnormal head positions in paralytic strabismus.

SUPPRESSION

Dr. Swan has pointed out that owing to the existence of common visual directions, both confusion and diplopia must appear when a misalignment of the visual directions occurs. Different object points stimulating corresponding retinal areas (for instance, the two foveas) are now seen in the same direction, creating confusion (fig. 1A). Single object points (for instance, the fixation point) stimulating noncorresponding retinal areas (for instance, in the case of the fixation point, the fovea of one eye and a peripheral region in the other eye) are seen in two different directions, that is, they are seen double (fig. 1B). The whole of the binocular field of vision becomes a hopeless tangle. Both confusion and diplopia are most distasteful to the organism which tries to rid itself of both. Loss of awareness of the visual impressions

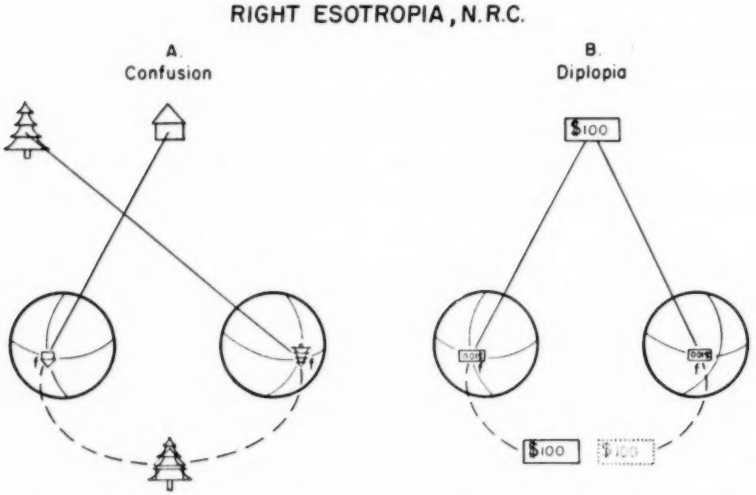


FIG. 1—A. Bimacular stimulation in strabismus results in confusion, unless the macular image in the deviated eye is being suppressed. B. Diplopia must arise in strabismus, unless the extramacular area carrying the image of the fixation point in the deviated eye is being suppressed.

In this diagram, as in all the others by which this paper is illustrated, the retinas are represented as seen from in back. The visual impressions are indicated below the retinas, but this is not intended to represent any "cerebral images" nor to establish an exact relationship between the stimulus in space and the subjective visual impressions.

from one eye, so-called suppression, is one way of achieving this.

We do not know as yet what mechanisms intervene to make suppression possible, but we do know that when dissimilar contours are presented to corresponding retinal areas, the observer will see now the contour presented to one eye, now the contour presented to the other eye, and then again both contours (for instance, by its macula). This assumption is supported by the fact that an increased tendency to unilateral or alternating suppression of macular images has been noted in persons who form a transition between subjects with normal rivalry and true squinters. Such individuals occur most frequently among the nonsquinters in families with a high incidence of manifest strabismus.

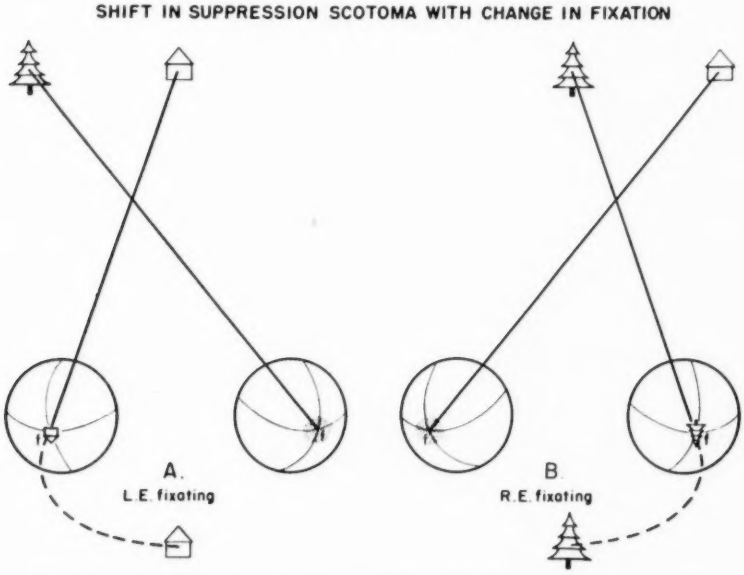


FIG. 2.—Alternate macular suppression with change of fixation in alternating strabismus.

simultaneously. This is what is known as retinal rivalry. We also know that people using monocular optical instruments, such as microscopes or ophthalmoscopes, or a watchmaker's loupe, are able to keep both eyes open and to suppress the image of the eye not engaged in the particular task. It is reasonable to assume that a mechanism similar to the one found in these normal situations is also operative in patients with strabismus, allowing them to suppress confusing images received by the deviated eye

Suppression exists only in binocular vision. In alternating strabismus the suppression in the deviated eye stops immediately when fixation is transferred and the deviated eye assumes fixation. It is worth while to pause here for a moment and to consider the extreme rapidity with which suppression can be transferred from one eye to the other. While an eye is deviated, its vision is very low and a functional scotoma can be mapped out (fig. 2). The fixating fellow eye has normal vision. The brief

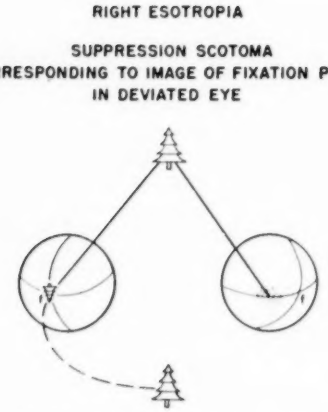


FIG. 3.—Suppression of extramacular area in the deviated eye.

time required to switch fixation from one eye to the other suffices to return normal vision to the deviated eye and to abolish its central scotoma. The central scotoma is now found in the formerly fixating eye whose vision was very much reduced when it became deviated.

In addition to the suppression of corresponding areas (which abolishes confusion) there is also suppression in noncorresponding areas (which aims at the avoidance of diplopia). This, too, is known from normal binocular vision; we are, as a rule, not aware of physiologic diplopia. Typical of the suppression of noncorresponding areas in strabismus is the scotoma in the deviated eye corresponding to the retinal region on which the fixation point is imaged (fig. 3).

Owing to suppression, then, both confusion and diplopia are relieved and the tangled visual field of the squinter is unscrambled, and a simple, single field of vision is restored. This visual field can be shown to be, in essence, a mosaic of uniocularly seen patches. This holds true at least for patients with normal correspondence. In anomalous correspondence an additional factor enters into the picture, as will be shown later.

Suppression does not include the whole of the retina. It is regionally selective. How helpful this can be to patients with strabismus is seen in some cases with a long-standing paresis of an ocular muscle (usually congenital). When the eyes are turned in the direction of the field of action of the paretic muscle (say the right lateral rectus muscle), there is suppression. When the eyes are turned away from the field of action of that muscle, the patient has normal binocular cooperation with stereopsis.

Suppression is not only regionally selective. There is also a selective suppression of specific visual functions. Thus a patient may selectively suppress disparate stimulations reaching the two eyes while retaining the ability of fusing the parts of the image stimulating corresponding areas. These are the patients who are said to have the so-called second grade of fusion, that is, the patients who have fusion but not stereopsis.

The ability to suppress is not developed equally well in all patients. It varies with the patient's individual adaptability, his age at the onset of the strabismus and with the duration of the condition. In some patients it is only fleeting, and they may complain of more or less frequent diplopia. In others suppression may be so deep that it is difficult to elicit diplopia by any means. This is important from a prognostic and therapeutic point of view. Suppression is undoubtedly beneficial, as has been shown, and should be encouraged in some patients. But if we aim at the restoration of binocular vision, suppression becomes one of the most serious obstacles to our success and one which must be removed if we are at all to achieve our goal.

AMBLYOPIA EX ANOPSIA

Indeed, in uniocular strabismus in which one eye is constantly deviated and

fixation is rarely, if ever, transferred to the fellow eye, suppression may become so profound that it continues to persist even in monocular vision. We speak then of an amblyopia. This amblyopia, considered as an active process, an extremely deep suppression, may be designated as an amblyopia of inhibition. However, this is by no means the only way to interpret the amblyopia found in patients with strabismus.

Amblyopia ex anopsia can be defined as a reduction in visual acuity in one eye which may be reversed by appropriate means, and for which no ophthalmoscopically demonstrable cause can be found. It is most frequently seen in patients with uniocular strabismus, but may occur also in patients without strabismus and without a history of deviation of the eyes.

It has never been definitely settled what degree of reduction of visual acuity should be classified as amblyopia. It must be emphasized that this is not so much an absolute as a relative matter. If one eye has a vision of 20/15, the other a vision of 20/20, that eye is amblyopic relative to its fellow eye, even though its vision is "normal." In theory there is no reason why arbitrary lower limits should be set in defining amblyopia. Practically speaking, however, such a limitation may be desirable to indicate a clinically significant degree of amblyopia. In the discussion of this question by the panel, preparatory to this symposium, agreement was reached that a visual acuity of 20/40 or less constituted a clinically significant amblyopia.

In general, all cases of unilateral amblyopia can be divided into two groups: the group of patients with organic amblyopia and the group of patients with functional amblyopia. The latter group represent the cases of strabismic amblyopia, properly speaking. To the first category belong the patients whose visual acuity is reduced because of visible pathologic changes in the refractive media, the retina or the choroid. This type of amblyopia is the exception in children with strabismus, but it must be discussed briefly, because it has some bearing on our problems.

Not all patients with strabismus are children. Some have acquired the strabismus during adult life. In the overwhelming majority of these patients, loss or severe impairment of the vision of one eye is the immediate cause of the misalignment of the eyes. Occasionally this also occurs in children. In these instances the amblyopia is responsible for the strabismus.

In the past, the question whether amblyopia ex anopsia is cause or consequence of strabismus has been much discussed. Experiences such as the ones just quoted led many authors to believe that amblyopia was the cause of the misalignment of the eyes. Today it is generally accepted that functional amblyopia is a consequence of the constant deviation of one eye. But there still are doubts whether this applies invariably to all cases, since many of the patients without strabismus in whom a unilateral amblyopia is accidentally discovered present an anisometropia with a high ametropia of the amblyopic eye. It is likely that we are dealing in these cases with a combination of organic and functional amblyopia. This applies also to the amblyopia in eyes with definite pathologic changes, in which the severity of these changes does not account fully for the reduction in visual acuity.

The nature and origin of functional amblyopia have also been debated a good deal. It has been mentioned that functional amblyopia may be the result of very deep suppression. The most widely held opinion is that functional amblyopia is the consequence of disuse rather than of active inhibition. If a child does not use an eye because it is deviated, this will lead to a deterioration of the func-

tion of that eye. This idea is implied in the most widespread term for functional amblyopia, the term amblyopia ex anopsia.

But this concept of a deterioration through disuse, probably taken—consciously or unconsciously—from an analogy with what happens in the case of muscles which are not exercised, has not proven satisfactory to everyone. Some have expressed the thought that functional amblyopia is not the result of disuse, but rather of an arrested development. It is well known that the visual acuity of infants is low and increases in the course of the first years of life. If at a certain moment during this development one eye begins to deviate constantly and is not used in central fixation, the further development of vision in that eye is assumed to be thwarted. Functional amblyopia thus becomes an amblyopia of arrest. The adherents of this theory claim that attempts to improve the vision of the amblyopic eye succeed only in raising the vision to the point which the eye had at the time of the onset of the deviation.

But this theory, too, presents difficulties. There is no proof that the "use" of an eye, more specifically the act of fixation, is a necessary prerequisite for its anatomic and physiologic development. Furthermore, there are at present no statistical data available which would unequivocally prove a connection between the level of correction achieved in amblyopic eyes and the age at the onset of the strabismus. Also there are some indications that the visual acuity of amblyopic eyes may be influenced pharmacologically. This and the facts that amblyopic eyes may slide back after an improvement in their acuity, and that one sees occasionally a reduction in acuity of the fixating eye after it has been occluded, militate against the theory of amblyopia of arrest. There is no doubt that disuse or active inhibition play a considerable role in the causation of a functional amblyopia.

The site of the defect in amblyopia ex anopsia is not known. The older authors took it more or less for granted that suppression and functional amblyopia are "psychological" processes which presumably means that these affections involve the cerebral cortex. A cortical dysfunction or inhibition might confine its effects to the cortex itself, or might project them centrifugally upon the lower levels of the visual pathways. It has been concluded by some from the result of studies of the pupillary light reflex in normal and amblyopic eyes and from pharmacologic studies that the inhibition, though originating in the cortex, is projected so as to suppress the activity of the retinal neurons. Other authors, on the contrary, have concluded that the disability results from a cortical inhibition of the higher cortical function of pattern vision, because of the finding that the absolute threshold of vision in an eye with functional amblyopia is the same as that in the normal fellow eye. Differences in the electric response of the occipital cortex when the normal and the amblyopic eye are subjected to intermittent photic stimulation would seem to bear out this point of view.

On the strength of the best evidence available at the present time, your panel feels that the functional amblyopia in strabismus is, at least to a large extent, the result of a more or less profound inhibition of the macular function, the seat of which is likely to be in the cerebral cortex.

ANOMALOUS RETINAL CORRESPONDENCE

While suppression succeeds in ridding the patients of diplopia, another adaptive mechanism, known as anomalous retinal correspondence, may be described as an attempt of the organism to restore binocular cooperation on the basis of the abnormal position of the

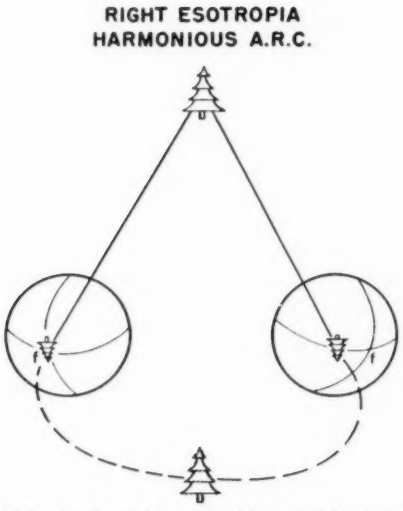


FIG. 4—Harmonious anomalous retinal correspondence. The patient has a single visual impression in the diplopia test. The figure indicates that images of different degrees of sharpness are superimposed.

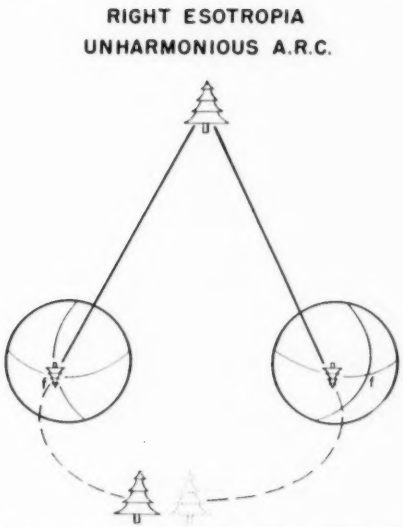


FIG. 5—Unharmonious anomalous retinal correspondence. The patient sees two slightly separated images in the diplopia test.

eyes. That this attempt is not wholly successful even under the most favorable circumstances has already been mentioned.

Normal binocular vision has been described to you by Dr. Swan. He has pointed out that it depends essentially on the existence of common visual directions between corresponding retinal elements and on the faculty to fuse into a single visual impression horizontally disparate stimulations reaching elements lying within Panum's areas, resulting in stereopsis. For our considerations it is of particular importance that there occurs in stereopsis an assimilation of the visual directions in the sense that the disparate retinal elements assume the visual direction of the corresponding centers of the Panum area to which they belong. This foreshadows the more extensive shift in visual directions which takes place in anomalous correspondence.

In this condition the normal retinal relationship is loosened and its place is taken by an abnormal relationship between the sensory elements of the two retinas. The trend of this change is always in such a direction that the fovea of the fixating eye tends to associate with itself—temporarily or permanently—the peripheral retinal element of the deviated eye on which the fixation point is imaged. If this is achieved, then the sensory disturbance caused by the deviation of the eyes is fully offset by a shift in visual directions which equals the angle of squint, and the resulting anomalous relationship is termed harmonious (fig. 4). If it is not quite achieved, and if a retinal element in the deviated eye which lies between its fovea and the peripheral element on which the fixation point is imaged acquires the visual direction of the fixating eye, then the angle of squint is not fully offset and the anomalous relationship is unharmonious or subharmonious (fig. 5).

Anomalous retinal correspondence can be defined in two ways. It may be said that the foveas of the two eyes acquire two different visual directions (fig. 6A), or it may be said that a peripheral element of the retina of the deviated eye acquires a common visual direction with the fovea of the fixating eye (fig. 6B). It is useful to remember both definitions, since they help one to understand the different tests for the determination of anomalous correspondence.

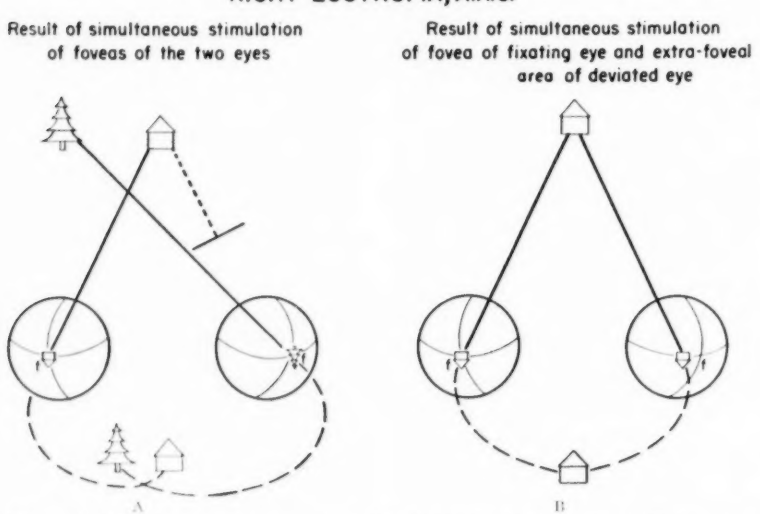

RIGHT ESOTROPIA, A.R.C.
Result of simultaneous stimulation of foveas of the two eyes
Result of simultaneous stimulation of fovea of fixating eye and extra-foveal area of deviated eye
A
B

FIG. 6.—A. Anomalous retinal correspondence defined in terms of the two foveas. B. Anomalous retinal correspondence defined in terms of the fovea of the fixating eye and an extramacular area in the deviated eye.

The development of an abnormal retinal relationship, especially of the harmonious kind, would seem to offer the opportunity to patients with strabismus to use their eyes together in more or less correct fashion, in spite of the misalignment of the eyes. However, one must not forget that these patients suppress certain areas in the deviated eye just as do patients with normal correspondence. This fact has disturbed many who have thought about the problem, and it has brought up the question: Of what use is anomalous retinal correspondence to the patients?

In answer to this, it must be understood first of all that the loosening of the normal retinal relationship by suppression appears to be a necessary prerequisite for the establishment of abnormal correspondence. Furthermore, one must consider that suppression occurs only in relatively small areas of the retina. It has been shown that disparate retinal stimulations applied to the retinal periphery result in fusional movements in patients with anomalous correspondence, although they never respond with stereopsis. There is, in general, a certain antagonism in the response of central and peripheral retinal areas in patients with strabismus. As a rule, the one thing which they try to avoid is an

effective bimacular stimulation. But some measure of binocular cooperation is achieved by these patients in peripheral vision, regardless of central vision and the state of retinal correspondence.

It must be mentioned in this connection that not everyone agrees that anomalous correspondence represents a shift in visual directions. Verhoeff, for instance, thinks that this impression is gained because the tests used do not faithfully duplicate the conditions of ordinary use of the eyes. He concluded that there is actually no correspondence in patients with strabismus, since he could show that an object moved along the visual axis of the fixating eye, and stimulating, therefore, a successive series of retinal elements in the deviated eye, was always seen in the same visual direction. In view of the results of the after-image test and in view of such phenomena as paradoxic diplopia, it is difficult to accept this conclusion, but if it should be shown to be correct, then this "absence of correspondence" in patients with strabismus could be interpreted as an attempt to replace the horizontal fusional movements of normal individuals.

Not every patient with comitant strabismus has anomalous retinal correspondence. Certain conditions are necessary to make its appearance possible. The sensory adaptation always lags behind spontaneous or induced changes in the angle of squint. If there are frequent spontaneous changes in the misalignment of the eyes, that is if the angle of squint is unstable, an anomalous correspondence may not get the chance to establish itself. This is why one finds so often normal correspondence or a superficially established anomalous correspondence in patients with accommodative strabismus, in patients in whom the angle of squint is markedly different in distance and near fixation, and in patients with intermittent strabismus. In every case the time required and the success in the establishment of anomalous correspondence depend on the individual adaptability of the patient.

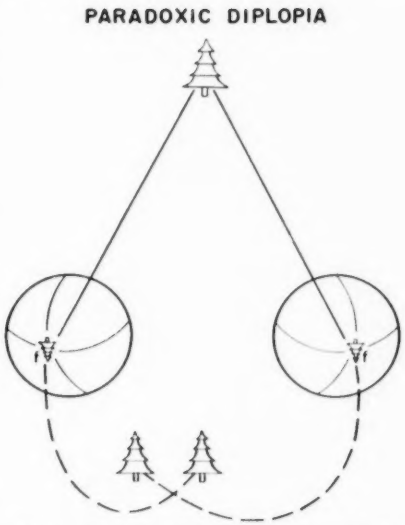


FIG. 7—Paradoxic diplopia (as after surgical straightening of the eyes of a patient with esotropia). Simultaneous stimulation of the two foveas results in crossed diplopia.

The lagging of the sensory adaptation behind the changes in the angle of squint explains also the phenomenon of unharmonious anomalous correspondence. It is rather puzzling why such a retinal relationship should be set up. It is explained if one considers every such case as due to a change in the angle of squint with which the sensory system has as yet not caught up. Sometimes we know the reasons for the change in the angle; in most instances we do not. A good example for an unharmonious retinal relationship with known cause for the change in the angle of a squint is the so-called paradoxic diplopia occurring after surgery (fig. 7).

Anomalous retinal correspondence, then, does not at once replace normal

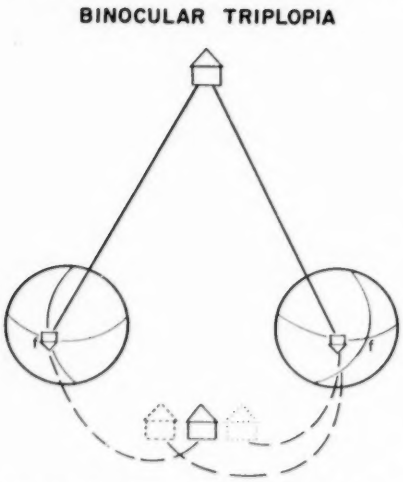


FIG. 8.—Binocular triplopia (indicating the two simultaneously perceived visual directions of the extramacular area of the deviated eye; one normal, the other abnormal).

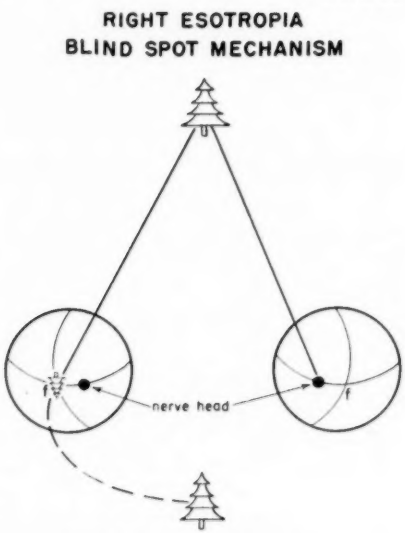


FIG. 9.—The blind spot mechanism.

correspondence. In the process of its establishment the abnormal retinal relationship pushes the innate normal retinal relationship into the background. During this process, and also during its reversal, it is often possible to elicit both a normal and an abnormal response in a patient. As a rule the two appear successively, but occasionally they are present simultaneously and one finds, then, the phenomenon of binocular triplopia (fig. 8).

The establishment of anomalous retinal correspondence must be considered to be a physiologic, not a psychologic, process. We know nothing definite about its neurophysiologic basis, but it has been attempted to explain it as a shift in impulse conduction. Owing to the abnormal stimulus situation which obtains in strabismus, changes in threshold occur at some synapses in the visual system which lead to a shift in the conduction to neighboring pathways, and accordingly to a shift in the subjective visual directions.

While anomalous retinal correspondence may be considered to be beneficial to patients with strabismus, it is, just as is suppression, a major obstacle to the restoration of binocular vision. A careful investigation of each patient will determine how deeply the anomalous retinal correspondence is rooted and whether the strenuous undertaking of curing it will be worth while.

BLIND SPOT MECHANISM

In some patients with accommodative strabismus and an angle of squint of 15 to 20 arc degrees, one may encounter a special form of sensory adjustment which must be singled out, because it demonstrates vividly the positive and the negative aspects of sensory adaptations in strabismus. This blind spot mechanism was extensively studied by Swan. We speak of it when the patients make use of the blind spot to avoid di-

plopia (fig. 9). It may occur spontaneously or after the surgical reduction of a larger angle of squint. Since these patients have a ready-made scotoma, there is no call for the development of suppression or of anomalous correspondence. On the other hand, these patients do have intermittent diplopia or, at any rate, diplopia is easily elicited, because they do not suppress. With proper treatment the prognosis for the restoration of binocular vision is excellent because the two great obstacles which ordinarily have to be overcome, suppression and anomalous correspondence, are absent. The existence of the blind spot mechanism is indirect evidence that suppression and anomalous correspondence are adaptive processes. They do not develop unless they are needed.

ABNORMAL HEAD POSITIONS

Although sensory adaptations, properly speaking, do occur in patients with paralytic strabismus, especially in the congenital variety, one finds in this type of squint more frequently a motor adaptation in the form of an abnormal head position.

Patients with paralytic strabismus tend to carry their heads in such a way that their eyes assume automatically a direction of gaze in which binocular vision is possible. Very often this means that the head is turned in the direction of action of the paralyzed muscle (for instance, to the right in a paralysis of the right lateral rectus muscle so that the eyes are turned to the left). But this is not invariably the case. In general, one can state that the patients assume the least uncomfortable head position in which binocular vision can be obtained. Thus one may find that patients with esotropia resulting from paralysis lower their heads (since the esotropia is relatively smaller in upward gaze than in downward gaze), and that patients with paralytic exotropia tend to lift their heads. In paralyses of the vertical motors a turn of the head may be combined with an elevation or depression of the chin.

A special case of abnormal head position is seen in patients with a paralysis of a superior oblique muscle. It consists of a tipping of the head toward the shoulder opposite the affected eye and is known as ocular torticollis. This phenomenon comes about in the following way. Whenever one tips one's head toward one shoulder, a vestibular reflex is set into motion and a strong impulse is sent to the superior rectus and superior oblique muscles of the eye homonymous with the shoulder. If one superior oblique muscle is paretic, tipping of the head to the homonymous shoulder results in an imbalance which produces a vertical deviation. If the patient now tips his head to the opposite shoulder, the paretic superior oblique is maximally disburdened. There is no vertical deviation, or only a slight one, and the patient may enjoy binocular vision.

It is significant that abnormal head positions, including a head tilt, are as a rule seen only in patients with good vision in each eye. There is no point in deviating from the normal position of the head if one eye is amblyopic. Motor adaptations do not occur unless they serve a useful purpose.

DIAGNOSTIC PROCEDURES

The diagnostic procedures employed in the clinical examination of the sensory phenomena in strabismus will now be reviewed briefly.

Tests for Suppression

All tests designed for the investigation of the state of suppression in a patient with comitant strabismus make use of a differentiation or dissociation of the visual fields of the two eyes. The two eyes are then presented with dissimilar or partly dissimilar images, and the state of the suppression is judged by

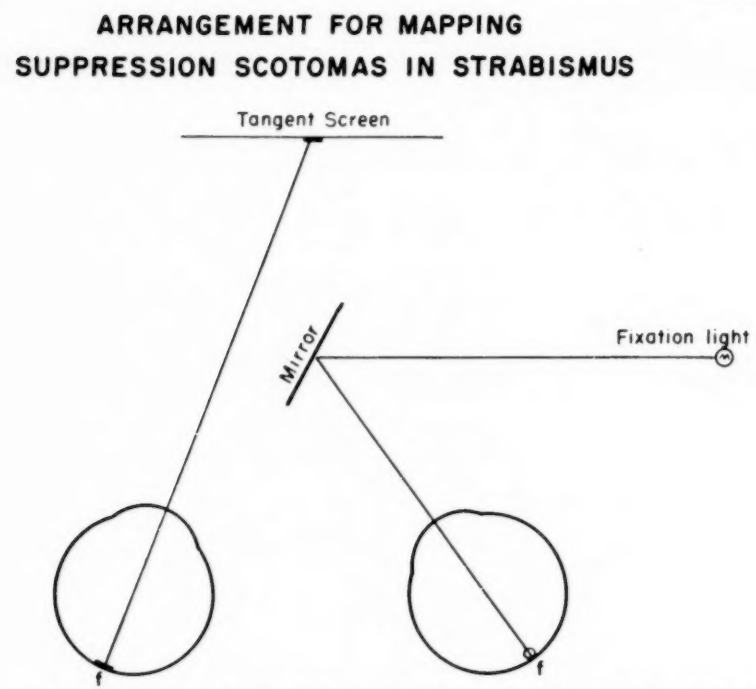


FIG. 10—Arrangement for the testing of the central field in binocular vision to map out functional scotomas in the deviated eye.

the patient's response. If he perceives simultaneously all elements of the images presented to the two eyes, there is no suppression. If some of the elements are missing, he is suppressing. If the patient can easily be made aware of the missing elements, the suppression is not very deep.

The differentiation of the visual fields of the two eyes can be achieved by means of complementary colors, as in the Worth four-dot test or in the Lancaster Red-Green test. The eyes must then be presented with at least two test objects in the same complementary colors, or the color differentiation can be attained by placing a red filter in front of one eye, as in a diplopia test. In this case only one white object is presented to both eyes.

The visual fields may also be completely dissociated, as in a stereoscope or in a major amblyoscope. These instruments have the advantage that targets of any desired design may be employed. Thus the behavior of suppression can be investigated with any degree of binocular stimulation.

To map out the functional scotoma present in patients with strabismus, one may avail oneself of such projection devices as the Lancaster Red-Green test, or one may dissociate the eyes by means of a mirror placed before the fixating eye and record the scotomas in the deviating eye on a tangent screen while the fellow eye maintains fixation (fig. 10).

Determination of Amblyopia

Amblyopia is investigated simply by masking a visual acuity test. It must,

RESULT OF SIMULTANEOUS STIMULATION OF FOVEAS IN RIGHT ESOTROPIA

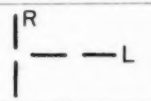
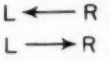
	Visual Directions of the Two Foveas	
	Identical (NRC)	Different (ARC)
After Image Test		
Major Amblyoscope (arms at objective angle)		
Lancaster Red-Green Test (lines at objective angle)		
Phi Phenomenon	no movement	

FIG. 11.—Tests for anomalous retinal correspondence, group 1.

however, be pointed out that eyes with functional amblyopia have the peculiar property that they discern isolated objects better than objects which are in close proximity to each other. One obtains, therefore, almost invariably a higher visual acuity when single letters or other symbols are presented to the patient than when a number of these are simultaneously exposed, as on a visual acuity chart.

Tests for Anomalous Retinal Correspondence

In accordance with the two definitions of anomalous retinal correspondence given, the tests may be divided into two groups: (1) tests in which one determines simultaneously the visual directions of the two foveas; and (2) tests in which one determines simultaneously the visual directions of the fixating eye and a peripheral retinal element in the deviating eye.

To the first group of tests belong the after-image test, the test with the major amblyoscope with the arms set at the objective angle of the patient, the Lancaster Red-Green test with the test lines displaced according to the patient's angle of squint, and the test making use of apparent movement (phi phenomenon). To the second group belong the diplopia test, the test with the major amblyoscope with the arms at zero, the Lancaster Red-Green test with the test lines placed at zero, and the Tschermak congruence test.

In the first group of tests, if the visual directions of the two foveas are identical (normal retinal correspondence, fig. 11), the after-images form a cross, the patient superimposes the targets on the major amblyoscope as well as the lines in the red-green test, and he perceives no apparent movement when the two foveas are successively stimulated.

RIGHT ESOTROPIA

Result of Stimulation of Left Fovea and Peripheral Retinal Element in Right Eye on which Fixation Point is Imaged

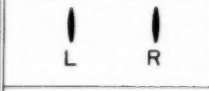
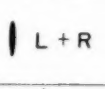
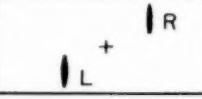
	Visual Direction of Fovea, L.E. and Peripheral Element, R.E.	
	Different (N.R.C.)	Identical (A.R.C. harmonious)
Diplopia Test		
Major Amblyoscope (arms at zero)		
Lancaster Red-Green Test (both lines at zero)		
Tschermak Congruence Test		

FIG. 12.—Tests for anomalous retinal correspondence, group 2.

If the foveal visual directions differ, the after-images, the amblyoscope targets, and the lines in the red-green test will all appear displaced relative to each other and there will be an apparent movement in the test for the phi phenomenon.

In the second group of tests (fig. 12) all test elements seen by the deviated eye will appear displaced according to the angle of squint if the fovea of the fixating eye and the peripheral retinal element in the deviated eye on which the fixation point is imaged have retained their different visual directions (normal retinal correspondence). If these two retinal areas have a common visual direction (anomalous retinal correspondence), the test elements are aligned and appear to the patient as they would to a normal observer, if the abnormal retinal correspondence is harmonious. If the abnormal retinal correspondence is unharmonious, the test elements will appear to be slightly displaced.

It is obvious that the test situation differs considerably in the various tests devised for the determination of the status of the retinal correspondence. One should, therefore, not expect in all patients complete agreement in all tests. Indeed, differences in the results with the various tests are highly significant from a prognostic point of view. The greater the number of tests in which the patient shows anomalous correspondence, the more profound is the anomaly and the more difficult it will be to normalize the retinal correspondence. And vice versa, the smaller the number of tests in which the patient shows anomalous retinal correspondence, the easier it should be to restore the retinal relationship to normal.

THE PATHOLOGIC PHYSIOLOGY OF THE HORIZONTAL DEVIATIONS

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PHILADELPHIA, PA.

STRABISMUS, or heterotropia, is a manifest deviation of the visual axes in one or more positions of gaze. The deviation of the visual axes is the chief sign by means of which the abnormality is recognized, but it is not the underlying abnormality itself. Like fever, it is merely a symptom. Fever is a sign of some condition in the body which has disturbed the normal temperature control; it is not a disease itself. Strabismus, likewise, is not a disease entity but is a sign that some pathologic process has disturbed the normal alignment of the eyes.

The division of cases of strabismus into those which are comitant and those which are incomitant is useful. By comitant strabismus is meant a relatively constant angle of deviation in versions, regardless of which eye fixates. By incomitant strabismus is meant an angle of deviation which varies in versions and with the fixating eye. An incomitant strabismus is always caused by an insufficient or an excessive activity of one or more of the ocular muscles. In reality, few patients have strictly comitant strabismus, for as Dr. Brown will point out, a vertical incomitant component is frequently found in otherwise comitant cases of esotropia when the eyes are in the extreme oblique positions of gaze due to physiologic factors.

Presented at the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

An incomitant strabismus is always caused by an insufficient or an excessive activity of one or more of the ocular muscles. The abnormal activity of the muscle or muscles may be due to insufficient or excessive innervation, to faulty anatomic relationships, or to the presence of contractures or fibrous bands. The nature and origin of incomitant strabismus will be dealt with by other members of this panel. Our present concern is the pathologic physiology of comitant strabismus.

THE NORMAL NEUROMUSCULAR MECHANISM

In order to understand the nature of a comitant deviation of the visual axes it is necessary to recall the neuromuscular mechanism by means of which the eyes are normally moved together with their visual axes in alignment. Two separate physiologic mechanisms are present which, while not independent of one another, may be described separately for purposes of simplification.

The Voluntary Mechanism

Oculogyric centers for voluntary versions are found in the frontal cortex in Area 8, alpha, beta, and gamma (Brodmann), similar to those found in Area 4 for voluntary movements of the general musculature of the body (fig. 1). By appropriate stimulation of these cortical areas on either the right or left side the eyes can be made to move together to the opposite side. Vertical movements are occasionally associated with these

adversive movements in experimental animals. Movements of divergence are also seen, but no convergence movements have been elicited by unilateral stimulation of these areas. All voluntary horizontal movements, that is, those carried out on command, arise from these centers. The fibers carrying these impulses descend in the internal capsule this center. All of the voluntary and reflex innervations for horizontal gaze go into the vestibular nuclei and are then sorted out to the appropriate ocular muscle nuclei through the mediation of the posterior longitudinal bundle. The subcortical centers for vertical gaze movements, both voluntary and reflex, are probably located in the superior col-

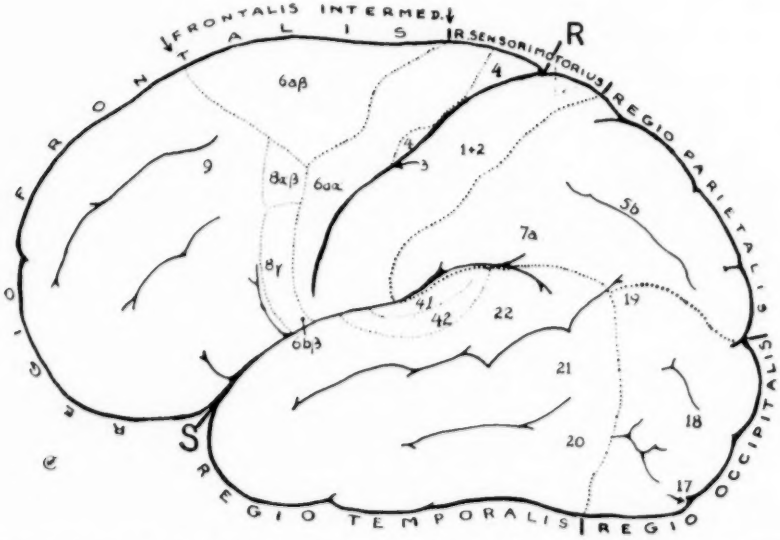

FIG. 1.—Surface view of the left motor cortex, slightly tilted to show Vogt's Area 8, alpha, beta and gamma. These are the areas of voluntary ocular movements to the right and possibly upward. No cortical areas have been discovered where stimulation produces either downward movements or movements of convergence. (From Penfield, Wilder, and Erickson, Theodore C.: Epilepsy and Cerebral Localization, Springfield, Illinois, Charles C Thomas, 1941.)

to the pons, and cross over to the opposite side at the level of the crossing for the facial fibers. In the pons they probably synapse in a subcortical center before being distributed to the nuclei of origin of the ocular muscles via the posterior longitudinal fasciculus. The pontine center for horizontal gaze has never been localized, but the weight of evidence at the present time is that certain cells in the vestibular nuclei form liculi (superior corpora quadrigemina). Likewise, the subcortical center for convergence is probably Perlia's nucleus. No subcortical center for divergence has yet been discovered.

While important in the use of the eyes in daily life, this is not the fundamental mechanism which keeps the eyes in alignment. We do not will to keep our eyes in strict alignment on an object so that its image falls on the fovea of each

eye, but if our eyes are normal, this is accomplished for us reflexly. The mechanism which does this constitutes the reflex or involuntary mechanism.

The Involuntary Mechanism

The movements of the eyes are controlled by a number of reflex mechanisms similar to those controlling the movements of the limbs. The chief reflex coordinating center controlling the activities of the limbs is the cerebellum. In addition, there are other important sources of tonus to all voluntary muscle, such as the "stretch reflexes" from the muscle spindles in the muscles themselves, and the so-called flexion reflexes by means of which a limb is reflexly withdrawn from contact with noxious influences applied to the skin, stimulating the skin receptors of touch, temperature, or pain.

The ocular muscles are constantly receiving innervation from the semicircular canals, the otolith apparatus, "stretch reflexes" from the neck muscles, and to some extent from muscle spindles in the ocular muscles themselves. The subcortical centers concerned with vergence movements are also constantly exerting an important controlling influence on the position of the visual axes. For the sake of simplicity, we shall refer to all these reflex sources of tonus to the ocular muscles as the "postural reflexes." These postural impulses engrafted on the anatomical factors control the position of the eyes in the orbit and, grossly, their relation to one another. Their combined activity determines the position of the visual axes in the dark, or when the lids are closed.

But light itself, admitted to the retina, acts as a source of innervation to the ocular muscles, provided of course that the visual apparatus and its conducting pathways are normal. Further, the formation of an image on the retina considerably enhances this tonic activity, which blossoms into full flower in the infant when the maculas develop. Since the acuity of the fovea far surpasses that of the peripheral retina, each eye is turned to the object of regard to ensure its image falling on this region. When the two eyes are used simultaneously, the two retinal images are brought onto the foveas if they are of sufficient clarity for the purpose of fusion. Nature has provided us with a special mechanism for this purpose, described variously as the fixation reflex, the fusion reflex, the following reflex and the accommodation-convergence reflex. These reflexes may be grouped together under the term "optomotor reflexes." The optomotor reflexes act as a fine adjustment to bring the visual axes into stricter alignment after the anatomic factors and the postural reflexes described above have aligned them grossly. As has already been explained by Dr. Swan, the highest degree of sensory fusion can only be achieved when the eyes are so aligned that corresponding retinal areas are stimulated. The optomotor reflexes are the motor counterpart of fusion, and accomplish the alignment of retinal elements having the same visual direction.

If anything prevents the optomotor reflexes from functioning the visual axes assume a position relative to each other which is determined by the anatomical factors and the postural reflexes. The visual axes may remain in good alignment. The individual in then said to have orthophoria. If the visual axes deviate from alignment, the individual is said to have heterophoria. In practice, we determine the presence of heterophoria by purposely preventing the optomotor reflexes from functioning, for example, by the cover test or the Maddox rod, and measure the amount of deviation of the visual axes. The purpose of measuring the amount of this deviation is to tell us how much work

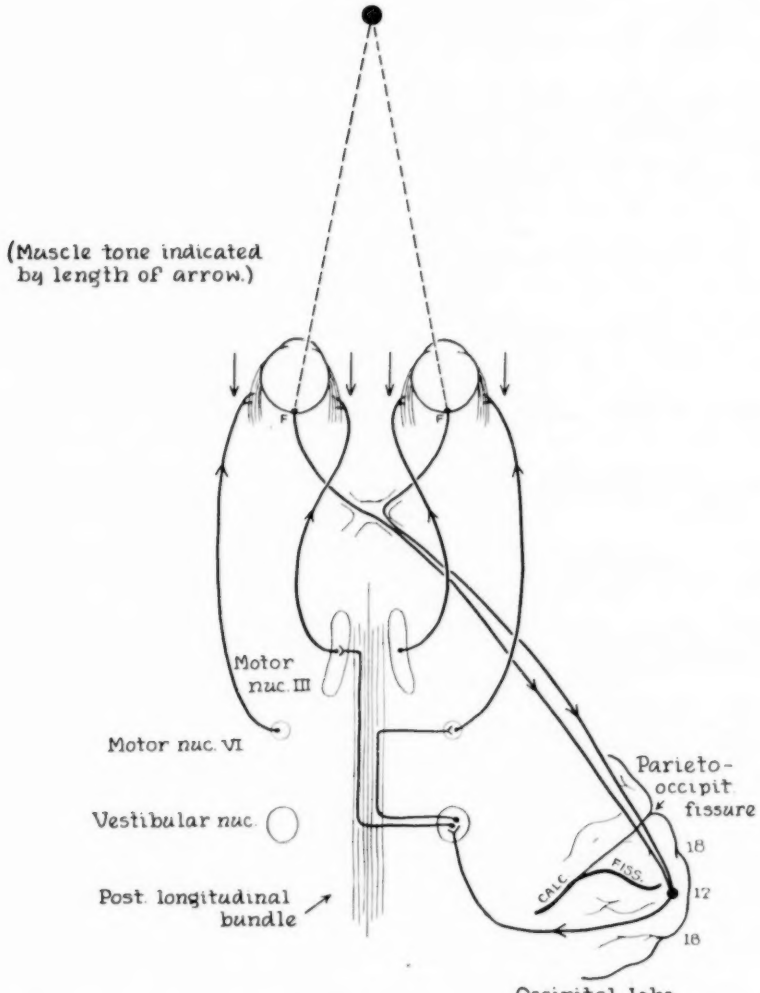

FIG. 2.—The image of the dot straight ahead of the eyes falls on the foveas. The impulses are carried up to the extreme tip of the occipital lobe along the calcarine fissure. The optomotor fibers carry impulses from here to the vestibular nuclei, which distribute tone to the ocular muscles (amount of tone indicated by length of arrow in diagram). As long as the images are on the foveas, the tone of the muscles turning the eyes to the right is equal to that of the muscles turning the eyes to the left. The diagram purposely begs the question of bilateral representation of the foveas. It may be imagined that the same stimuli go to the left calcarine cortex, as is shown here to the right.

the optomotor reflexes must do in that particular patient in order to keep the eyes in alignment over and above the effectiveness of the anatomic factors and the work done by the postural reflexes. It is apparent that the optomotor reflexes are extremely important to us, for few individuals are orthophoric for both distance and near and in the various versions. The optomotor reflexes are not limited to versional movements of the eyes, but function in the vergences as well. They are most effective when the images fall on slightly disparate retinal areas. If the retinal areas stimulated are widely disparate, these reflexes break down.

The afferent pathway for the optomotor reflexes is the same as that for the visual impulses. The visual impulses from corresponding halves of each retina end in cells in the striate area of Area 17 of each occipital cortex. Fiber connections exist between Area 17 and Areas 18 and 19, the parastriate and peristriate areas. Area 18 probably contains the motor cells which, under the influence of stimulation from the ipsilateral Area 17, send impulses to the various ocular muscle nuclei, influencing the tonus of the appropriate ocular muscles. The efferent pathways by means of which these motor impulses reach the appropriate ocular muscles is not definitely known.

A much simplified scheme of how this mechanism works in versions can be illustrated in the following drawings (figs. 2, 3, and 4). Assuming that the image of an object falls on both foveas, the tonus sent from Area 18 to the right and left turners of both eyes is equal, as represented by the equal length of the arrows in figure 2. When the object moves to the left of the individual, the image now moves on the retinas to the right of each fovea. The cortical region of Area 17 now receiving the retinal messages lies along the calcarine fissure slightly forward of the region receiving images from the foveas, and accordingly other cells of Area 18 are now activated, which in turn send tonus of unequal value to the right and left turners of the two eyes — the left turners receiving more tonus and the right turners being inhibited. The result is that the eyes are reflexly turned to the left by just the right amount, so that the image once more falls on each fovea. In this way the image is kept on the region of most acute vision in each eye and the two images are fused. **The reflex activity** which brings the images onto the foveas has been called the following reflex, and the reflex activity which keeps the images on the foveas, once they have been brought there, is known as the fixation reflex. In a similar fashion, the optomotor reflexes are effective in producing vergence movements of the eyes, bringing the images onto corresponding retinal areas, for example, the foveas, and holding them there when an object is brought at different distances from the eyes. This reflex has been described as the fusional reflex.

In the normal individual the anatomic factors, the postural reflexes, and the optomotor reflexes keep the eyes in good alignment in all positions of gaze. Abnormalities of one may be compensated by the others, for example, an abnormality in the anatomic factors, such as unusually prominent eyes and a wide interpupillary distance, may be compensated by the postural and optomotor reflexes and the eyes may be maintained in good position in all directions of gaze. If we prevent the optomotor reflexes from functioning in such an individual, we generally find that he has a high degree of exophoria. Excessive or deficient innervation from any of the postural sources of tonus may be compensated by the optomotor reflexes; for example,

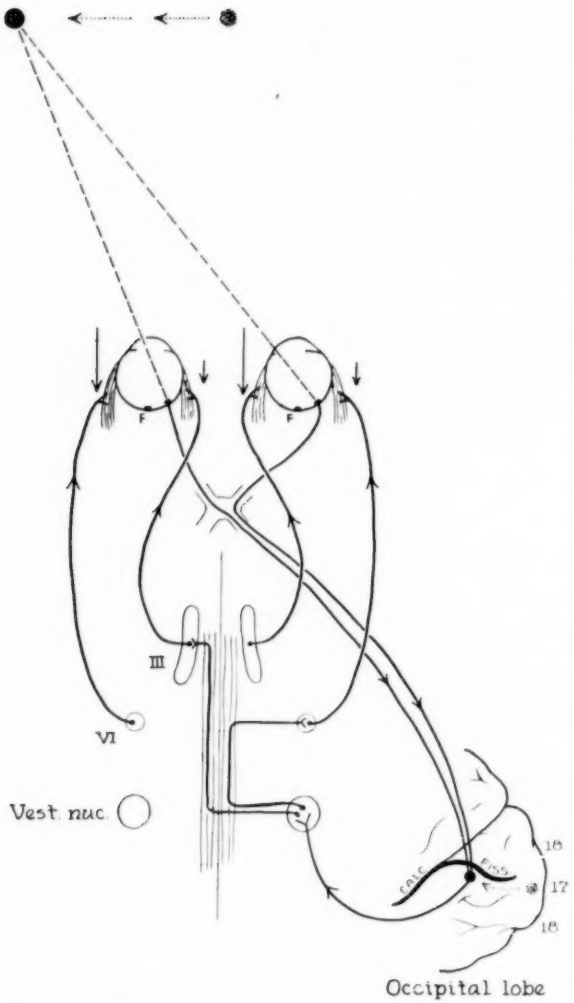

FIG. 3—The spot has moved to the left and therefore its image has moved off the foveas onto the right halves of the two retinas. The visual impulses are carried up to the occipital cortex, to cells which lie farther forward along the calcarine fissure than those which come from the foveas. From these cells an optomotor impulse is sent to the vestibular nuclei which diminishes the tone of the muscles which turn the eyes to the right and increases the tone of those which turn the eyes to the left. The eyes are therefore turned to the left until the image of the spot once more falls on the foveas.

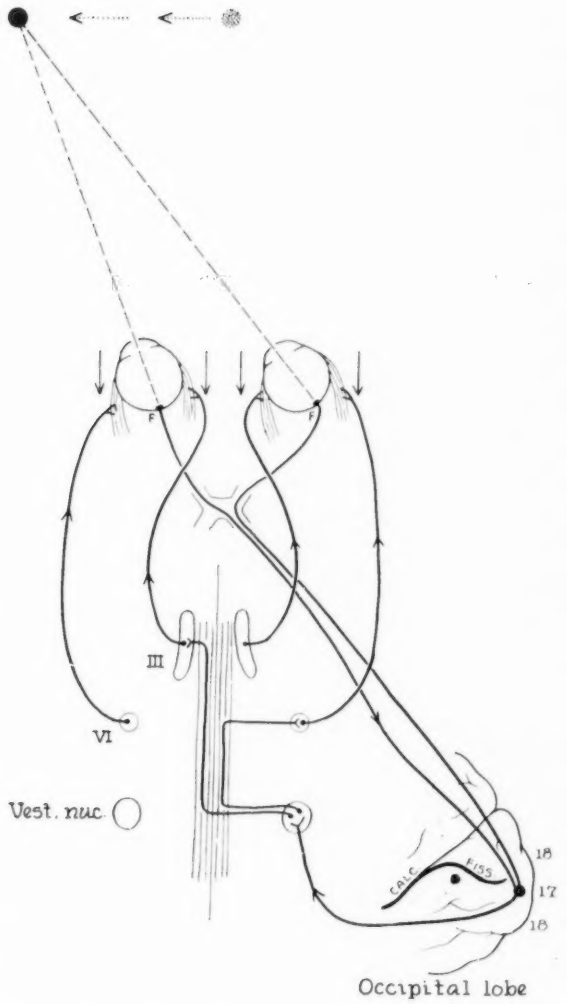

FIG. 4—The eyes have turned to the left by means of the visual fixation reflex to follow the movement of the spot. The images which now fall on the foveas again send their impulses up to the foveal localization of vision in the occipital cortex, and the optomotor impulses once again equalize the tone of the muscles turning the eyes to the right and of those turning the eyes to the left, so that the eyes remain fixed as long as the image of the spot remains stationary.

the amount of accommodative convergence tonus may be excessive due to hyperopia, and the individual's visual axes may still be kept in alignment by the optomotor reflexes. When these are prevented from functioning we generally find the patient has a high esophoria. The optomotor reflexes may be absent, for example, in an individual who has had a blind eye from birth, and yet his visual axes may remain entirely straight in all positions of gaze due to the combined anatomic factors and postural reflex activity. Small changes in either of the three factors may therefore be compensated by the remaining two. On the other hand, a defect may be so marked that it cannot be compensated by the remaining factors. Such a failure results in a manifest deviation of the visual axes in one or more positions of gaze, which is our definition of strabismus. In comitant strabismus we are chiefly concerned with abnormalities in vergences, and not in versions. The anatomic factors, the postural reflexes for convergence, and the fusional part of the optomotor reflexes are therefore the factors of chief concern to us.

Comitant strabismus is a manifest heterophoria. There is no difference between a heterophoria and a heterotropia save that the former is a deviation which can only be detected by artificially eliminating the fusional component of the optomotor reflexes, while in the latter the deviation is manifest, since the fusional reflexes have already failed in maintaining alignment. This concept is fundamental to an understanding of comitant strabismus.

The absence of the fusional reflexes alone will not produce a heterotropia. It is common experience to see patients who have no possibility of sensory fusion, for example, having one blind eye, whose eyes remain in good alignment. The pathogenesis of comitant heterotropia must therefore reside in either some abnormality of the anatomic factors or some abnormality in the postural reflexes for vergences which should maintain the eyes in good alignment in the absence of the optomotor reflexes. The problem of the pathogenesis of comitant heterotropia resolves itself, therefore, into a search for the causes of heterophoria, that is, esophoria and exophoria.

What are the factors which favor horizontal misalignment of the visual axes?

SENSORY DISTURBANCES WHICH BREAK UP OR PREVENT THE DEVELOPMENT OF THE OPTOMOTOR REFLEXES

In infancy and early childhood the fusion-free position of the normal eyes is convergent. In the adult and in old age tonic convergence tonus is diminished and the dissociated position is divergent. In other words, in early life esophoria is prevalent, while exophoria follows later in life. Not all of the reasons for this change in postural tonus are known. It may partly be due to the change in refractive state, in that hyperopia is normal in infancy, followed by emmetropization and/or myopia as growth proceeds. This does not seem to be the only factor, however. At birth the eyes function independently to a large exent. Even the independent function in each eye yields little more than light perception and motion of objects in the visual field. The foveas are not developed until the third month of postnatal life. At birth the lids will blink when light is thrown into each eye, but the eyes will not turn toward the light. At about the second week the infant will respond to light thrown into one eye from the side with a movement of this eye toward the light, and generally the other eye will move equally in the same direction,

showing the earliest development of versions. Frequently the movement of the fellow eye is imperfectly carried out, and not until the first month or two will versions be performed more accurately. Vergences develop even later, and not until the third to the sixth month does one find the eyes remaining in an accurately fixed convergent position on the object of regard. The vergence reflexes develop later than the version reflexes. During the first four months of life accommodation is not possible, nor is it required, since the foveas are not fully developed. Accommodation develops only to the degree of the existing visual acuity, which does not approach the adult level until the age of two years. During the infant's early development, therefore, accommodation and convergence do not go hand in hand. A more exact accommodation-convergence relationship would seem to develop, and during this period excessive convergence movements are frequently seen when the normal child looks at near objects. It is the effort of accommodation rather than the actual amount of accommodation attained which determines the intensity of the associated adduction of each eye. From this it follows that anything which interferes with the optomotor reflex mechanism so that the eyes become dissociated sensorially at an early age is prone to result in convergent strabismus. Convergent strabismus is by no means always the case, however. The majority of children who develop the condition called intermittent exotropia do so at an early age. It should be emphasized that there is no fundamental difference between esophoria and exophoria or between esotropia and exotropia except the obvious one of the visual axes being on different sides of the parallel primary position. Whether an esotropia or an exotropia will develop depends entirely on whether the sum total of anatomical factors plus the postural convergence tonus favors an in-turning or an out-turning of the visual axes.

The loss of vision of one eye from any cause in infancy usually results in convergent strabismus, as stated above. The loss of the optomotor reflexes which normally inhibit the excessive tonic convergence tone of infancy produces an overconvergent position of both eyes. The good eye takes up fixation, while the eye with poorer vision absorbs the excessive convergence tone, so to speak, and turns in. If the convergence tonus is subnormal, as occurs in some children, the poorer eye will turn out. Impairment of vision may arise from any defect in the ocular media, the retina, or the conducting pathways. It is not necessary that the vision be entirely lost in one eye, but only that it be impaired to an extent that the image loses its potency in eliciting an optomotor fusional response.

REFRACTIVE ERRORS WHICH INFLUENCE ACCOMMODATIVE CONVERGENCE

Donder's theory that a comitant convergent strabismus may be caused by hyperopia in infancy and a comitant divergent strabismus by myopia has never been satisfactorily refuted, although there have been strong opponents to it, and some of the objections have not been satisfactorily answered.

In addition to the excessive tonic convergence of childhood, the infant with hyperopia is presented with the problem of employing an excessive amount of accommodation in focusing on near objects. This occurs at the time of life during the development of the optomotor reflexes. The excessive accommodative effort carries with it excessive accommodative convergence, and the child is presented with the dilemma of accepting either a blurred single image of the object of regard or a clearly focused double image. Since the optomotor reflexes are of little potency at this time,

and suppression is easily acquired, the excessive accommodative convergence is uninhibited, and the eyes turn in. This can occasionally be observed in normal infants who do not develop strabismus, since overconvergence to an accommodative effort frequently occurs in the normal child during the period of development. This is transitory, of course, and the trial and error method soon teaches the child the proper amount of convergence to employ. In the accommodative squinter the excessive convergence is persisted in because of the necessity of getting a clear retinal image by accommodation, and the child learns to fix with one eye and turn the other in. If the eyes are of equal value in image formation and there is no strong dominance, the strabismus may remain alternating, first one eye and then the other being used for fixation, but generally these children become monocular squinters instead of alternators because one is more hyperopic or less strongly dominant than its fellow which is elected to be used. Alternating or monocular fixation depends, therefore, on whether or not the two eyes are of equal value in seeing.

The arguments outlined above apply equally to infants with either congenital or acquired myopia, which as stated previously favors exophoria and therefore the development of an exotropia.

A number of perplexing questions can be asked about the accommodative type of strabismus for which there are no clear-cut answers. Some of these are as follows:

1. *Why do some children with fairly high hyperopia not squint, while others with a much lower degree of hyperopia squint? Why is there no correlation between the angle of squint and the amount of hyperopia?* One answer is to assume that the convergence mechanism is less under the control of the optomotor reflexes in some children than in others, or that it is a trigger mechanism, either "firing off" or not, depending on its sensitivity. From this point of view the tonic convergence postural reflexes, being excessive in some children, are more easily influenced by an accommodative effort than those whose tonic convergence postural reflexes are normal. Hence, in some a low degree of hyperopia will result in a convergent comitant strabismus, whereas in others only a high degree of hyperopia will effectively break down the fusional optomotor reflexes.

2. *How can one explain the inheritance in this type of squint?* It is recognized that nearly 50 per cent of these children come from families in which there is a history of strabismus in one or more of the immediate or closely related members. The simplest, but not necessarily the correct answer to this question is to assume that hyperopia is the inherited factor, or that the lack of effectiveness of the optomotor reflexes or the sensitivity of the tonic convergence postural reflexes is the inherited factor.

3. *Why are not all of these cases of strabismus cured by wearing glasses?* In spite of wearing full correction, and even bifocals, a fairly large number of these children continue to squint. This is particularly true if the glasses are put on for the first time after the squint has been established for some time. The answer to this question belongs to the domain of those who are discussing the sensory aspects of strabismus or the sequelae of strabismus such as the development of contractures in muscles, and will not be considered here.

FACTORS INFLUENCING TONIC CONVERGENCE

Not all comitant squints are due to impairment of vision in one eye or to the refractive state. One must look for the deviation of the visual axes in some disturbance of tonic convergence in the

infant. Time does not permit us to speculate on how the tonic convergence mechanism may be disturbed in infancy, nor is our knowledge of the normal physiology of the convergence mechanism sufficiently advanced to make such speculation possible. The tonus of the subcortical convergent centers is controlled by many complex factors and, even in the adult, can be changed experimentally, as has been demonstrated by the use of alcohol and anoxia.

Based on pathologic physiology, cases of comitant strabismus may be divided into the following groups. Each of these has certain well-recognized characteristics, and since the treatment of each differs radically from the others, such a classification is of clinical value.

Comitant Esotropia

Comitant esotropia due to sensory disturbances. If the visual impairment of one eye takes place in early infancy, convergent strabismus generally develops, but divergent strabismus may occur. The cause of the strabismus should readily be detected by the objective examination. Unilateral microphthalmos, coloboma of the macula, toxoplasmic choroiditis, congenital cataract, and retinoblastoma frequently produce comitant esotropia in the infant. To overlook the cause of the strabismus in such cases would, of course, be disastrous.

Accommodative esotropia. This type of esotropia can be recognized by the following characteristics:

1. The deviation of the visual axes generally begins after the age of two, the majority commencing between two and four years of age.

2. The magnitude of the deviation is variable at the start and frequently occurs at first only when the child is tired or during an illness. It then may become constant and stabilize itself as time goes on for any degree of vergence.

3. The magnitude of the deviation is seldom over 40 prism diopters.

4. The deviation is greater for near than for far; that is, it increases as accommodation is employed, but is comitant in that it does not vary with versions or with either eye fixating.

5. The magnitude of the deviation bears no relationship to the visual acuity of either eye; that is, there is no correlation between the angle of squint and the degree of amblyopia, if present.

6. The majority of these children retain normal retinal correspondence.

7. An amount of hyperopia is usually present in esotropia greater than that of the average nonstrabismic child of the same age.

8. In the majority of patients, the correction of the refractive error by glasses results in a cure of the strabismus if treatment is begun in the early stages and is maintained.

9. A hereditary or familial history is obtained in about 50 per cent of these patients.

Comitant esotropia of undetermined etiology. For want of a better term, we refer to those patients whose strabismus is due neither to sensory disturbances nor to errors of refraction as cases of esotropia of undetermined etiology. While some of these patients may have anatomic factors which influence the development of the strabismus, it would seem that the majority are innervational in origin, since the deviation disappears under ether anesthesia. Whether they are in reality due to disturbances in the mechanism of tonic convergence or to some unknown factor, they should be differentiated from the other types of strabismus since they have quite different characteristics and their treatment is different. The following characteristics differentiate this type of strabismus: (1) the strabismus is present either at birth or comes on shortly after birth;

(2) the amount of the deviation is generally large, that is, over 40 prism diopters; (3) the angle of deviation is more constant than in the accommodative variety, and measures approximately the same for distance and near; (4) fixation is generally alternating, the visual acuity is generally normal in each eye, and amblyopia is rare; (5) the majority of these children have anomalous retinal correspondence; (6) the refraction parallels that of the nonstrabismic child of the same age group; and (7) correction of any refractive error present has no effect on the angle of squint.

A separate group may be formed, having in addition to the characteristics of those due to sensory obstacles or those of undetermined etiology an accommodative element, since the children in this group have also a considerable refractive error. The result is that they acquire some of the characteristics of those in the accommodative type as well.

Comitant Exotropia

Comitant exotropia due to sensory disturbances. This is commonly seen only in adults who lose the vision of one eye from any cause whatever. The blinded eye gradually turns outward, and a comitant divergent strabismus is produced.

Accommodative exotropia. Myopia is nearly always associated with exophoria in the same way that hyperopia is associated with esophoria. Exotropia on the basis of myopia is much rarer, however, than esotropia on the basis of hyperopia. The tonic convergence of childhood apparently holds in check the loss of accommodative convergence in the myope.

Exotropia of undetermined etiology. Cases of intermittent exotropia fall into this group. They are not based on sensory disturbances, neither are these children myopic. The exotropia is always greater for far than for near, and at the start the convergence near points are normal. Gradually, however, convergence may cease to function. The strabismus depends primarily, therefore, on a divergence excess. It is probably based on either subnormal tonic convergence or on excessive divergence impulses about which at present we know little.

We have seen that comitant strabismus is a condition in which the anatomic factors and/or the postural reflexes are of such a nature that a deviation of the visual axes results, the optomotor reflexes being inadequate to keep the eyes in alignment. The deviation of the visual axes merely indicates the failure of the optomotor reflexes to correct the inadequacy of the anatomical and postural factors. There is still much to be learned regarding the pathologic processes which cause this inadequacy, but we already know enough to appreciate the complexity of these processes and to conclude that comitant strabismus is a symptom of a number of quite separate disease entities. Some of these are known, while others remain as problems yet to be solved.

Symposium: Strabismus

VERTICAL DEVIATIONS

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A CLINICALLY significant vertical deviation is detectable in approximately one half of all patients with strabismus. Of these only a few have gross anatomical anomalies or evident paralyses of one or more vertically acting muscles. Generally these cases offer little difficulty in diagnosis or in their clinical management. This is also true of those small comitant vertical deviations which are amenable to corrections with prisms. The great majority of patients with strabismus who have vertical deviations show no gross anatomical anomalies or paralyses. These deviations are often of obscure origin and may present different problems of management than do the other types of strabismus.

The limits of a vertical deviation accepted as normal are small, and there is no necessity in normal vision for vertical disjunctive movements in ordinary positions of gaze. In contrast, normal horizontal deviations may be of considerable magnitude and horizontal alignment of the visual axes has of necessity to allow for greater flexibility due to the continual convergence and divergence for binocular fixation at varying distances.

A number of factors may cause vertical deviations. These may be insertional and structural anomalies, abnormal innervations, congenital or acquired nerve pareses, or lesions of the muscles themselves.

Vertical deviations usually are classified as comitant, incomitant, or as alternating sursumduction.

It should be remembered that each normal extraocular muscle has a reserve of power to perform its functions; therefore, paresis of a muscle may not limit monocular rotations. The underaction or overaction of a vertically acting muscle is best determined by the comparison of this action with that of its yoke muscle in the other eye in an oblique field of gaze. That field of gaze is chosen which, as near as possible, will isolate the vertical action of the two muscles. For example, in the position of the eyes up and right, the right superior rectus is not only in its field of maximum vertical action, it is almost entirely responsible for elevation of the right eye. The left inferior oblique, that is its yoke muscle, is also in its field of maximum vertical action and is almost the sole elevator of the left eye in this field of gaze. The vertical deviation present in this position would be the expression either of an underresponse of the elevator of the lower eye or of an overresponse of the elevator of the higher eye to an equal and simultaneous stimulus for the eyes to move up and to the right. The four oblique fields of gaze are regarded as the diagnostic positions of the eyes for the vertically acting muscles in the same fashion that the right and left fields of gaze are regarded as diagnostic positions for analysis of overaction or underaction of the medial and lateral rectus muscles.

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Incomitancy of a deviation may be detected by any type of version test which will reveal the difference in the amount of the deviation in these diagnostic positions. The deviation becomes evident by a lag or overshoot of the nonfixating eye. Objective measurement of the deviation can be made in these various positions of gaze by gross estimation of the misalignment, by the amount of displacement of the corneal reflex of the nonfixating eye, and by the cover test in which the movement of the eyes is neutralized with prisms as each eye is alternately covered. It should be stressed that the absence of a vertical deviation in the primary position does not rule out the presence of a significant deviation in other fields of gaze.

Comitancy in certain portions of the motor fields may develop in cases due to pareses. A number of factors may contribute to this, such as marked secondary deviation, contraction, and inhibitory pareses. Under these circumstances, recognition of the presence and extent of secondary deviation and contraction is of major clinical importance.

Determination of the fixating eye is necessary in the analysis and management of these secondary deviations. For example, in pareses when the patient habitually fixates with the paretic eye, the yoke muscle receives excessive innervation with resultant overaction, in accordance with Hering's law. When the patient fixates with the nonparetic eye, an increasing action of the direct antagonist occurs. Eventually a contracture may take place.

When the secondary contraction of the direct antagonist is marked, the underaction of the paretic muscle will be more pronounced. Also, the secondary overaction of the yoke muscle, in a like fashion, can affect the action of its antagonist by producing an apparent underaction, or inhibitory paresis, of this muscle. Thus in old slight-to-moderate pareses, the proper evaluation of the actions of the muscles involved, either primarily or secondarily, requires accurate determination of the fixating eye.

Coexisting horizontal and vertical deviations are encountered frequently and are important as they may influence each other. The more incomitant the vertical deviation is, the greater will be the influence of a horizontal deviation on a vertical deviation. For example, a prominent overaction of an inferior oblique muscle of the nonfixating eye will be more evident in the presence of an esotropia because the nonfixating eye will be in the adducted position. This is the position of maximum vertical action of the obliques. An exotropia will place the nonfixating eye farther out of this position and may minimize the vertical deviation due to an inferior oblique overaction so that it will become evident only when the affected eye is carried into an adducted position. This would only occur in extreme conjugate gaze to the opposite side. The overactions or underactions of the superior obliques will be affected similarly by horizontal tropias, as their field of maximum vertical action is about the same as that of the inferior obliques, that is, in an adducted position of near 50 degrees.

The superior and inferior rectus muscles exert their maximum vertical action when the eye is in an abducted position of near 23 degrees; thus, vertical deviations due to dysfunction of these muscles will be more marked if the coexisting horizontal deviation is an exotropia and will be minimized if the coexisting deviation is an esotropia.

In all anomalies of the vertically acting muscles, diagnosis and evaluation is made more difficult by the presence of a moderate or marked horizontal tropia. For reasons already presented, small vertical deviations may be accentuated and large ones may be masked until the horizontal deviation is corrected.

The influence of a vertical deviation on a horizontal deviation may be pronounced. First, an exodeviation or esodeviation is frequently found to be secondary to a minor vertical deviation that has embarrassed or disrupted the fusion mechanism. An acquired vertical deviation of relatively small magnitude may interfere with fusion due to the fact that the amplitude of vertical vergence is normally small and, therefore, incapable of compensating for a deviation of any magnitude. As pointed out earlier, normally there is no necessity for utilizing vertical fusional movements in shifting binocular fixation in the various directions of gaze. Thus, the vertical vergence mechanism does not develop the range of amplitude of normal horizontal vergence.*

This relative inflexibility of the vertical vergence may account in part for the frequently observed decrease in the efficiency of the horizontal fusional mechanism to deal with a horizontal deviation in the presence of a minor vertical deviation. Correction of the small vertical deviation with a prism will often restore to normal the amplitude of horizontal fusional movements. This has been emphasized by Scobee.

When fusion is disrupted by a hypertropia, an increase in a horizontal deviation may develop. This can possibly be attributed to a reflex or voluntary attempt to lessen the visual confusion of a vertical diplopia by separating the images horizontally. This separation may be influenced by the excess of, or deficiency of, the accommodative effort.*

An incomitant horizontal deviation can be caused by a paretic vertical acting muscle. This incomitancy may be particularly evident in cases where the same muscle in each eye shows a primary underaction such as bilateral superior rectus pareses. The secondary overactions of the antagonists and associate muscles of the other eye, in such cases, seem to increase the incomitancy. This incomitancy may be grossly evident in eyes straight up and in eyes straight down, and unless accounted for on an anatomical basis, seems best explained as an imbalance of the horizontal action of the vertical rotators. Figures 1 and 2 illustrate this incomitancy in terms of the imbalance of the horizontal action of actively contracting vertical rotators in a straight up and a straight down position of the eyes.

The most dramatic type of incomitancy in up-and-down gaze appears in cases of bilateral underaction of the inferior rectus muscles with secondary deviations and contractions. In figure 1 a parallel alignment of the eyes in straight up and in straight down gaze is represented by means of dotted pupils on dotted lines. The solid arrows indicate the adduction component of the vertical rectus muscles. The dotted arrows indicate the abduction component of the oblique muscles. The long dotted and long solid arrows indicate an increase in the horizontal action of the overacting vertical rotators. The short

* It usually takes longer to bring out the upper limits of the normal vertical vergence and to release it after it has been activated than is required with horizontal vergent movements. This fact can be observed by stimulating vertical vergence with a base up or base down prism. It takes several minutes to overcome the induced diplopia, and after a few hours of wearing this correction, the vertical vergence impulse will be evidenced by a transitory diplopia in the opposite direction which is present immediately after taking off the prism. This persistency is often seen clinically and makes it difficult to determine the latent hyperphoria, short of prolonged occlusion.

* It is possible that in children the blurring from an excessive accommodation and convergence in producing an esotropia is less confusing with the vertical diplopia separated horizontally than when the images are plain but one is directly above the other. If an exotropia is more easily obtained by suppressing accommodation in a hyperopic child, the horizontal separation of the images may be varied by a decrease in the accommodative effort. In adults a divergent or convergent deviation may be increased by similar effects on the accommodative convergent mechanism.

dotted and short solid arrows indicate a decrease of the horizontal action of the underacting vertical rotators. The black pupils on the solid lines represent the resultant position of each eye as determined by these two opposing horizontal forces. In straight downward gaze, all depressors are actively contracting.

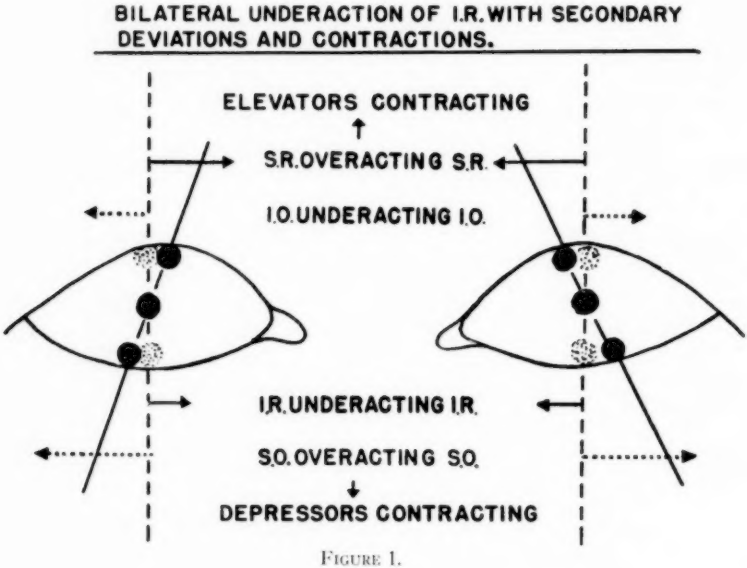

FIGURE 1.

Symmetrical imbalances between the same depressors in each eye will allow the eyes to be lowered on the same level, providing the horizontal position of each eye is the same. Clinically this often occurs in such cases in response to the command, "Look down." The inferior rectus muscles are primarily underacting. This underaction will cause a decrease in their secondary action of adduction as illustrated by the short solid arrows. The superior obliques are secondarily overacting (secondary deviations) as illustrated by the long dotted arrows. The position of the eyes as determined by these two unequal opposing forces, will be that of divergence. In upward gaze all elevators are actively contracting. The superior rectus muscles are secondarily overacting (secondary contractions). The long solid arrows show the effect of this overaction as an increase in their adduction component. The inferior oblique muscles are secondarily underacting (inhibitory pareses). The short dotted arrows show the effect of this underaction as a decrease in their abduction component. The position of the eyes, as determined by these two unequal opposing forces, will be that of convergence.

Figure 2 illustrates the less dramatic type of incomitancy in up-and-down gaze that may occur in primary bilateral underaction of the superior rectus muscles, with secondary deviations and contractions. Here a reverse type of incomitancy occurs. In upward gaze there is a divergence of the visual axes. The superior rectus muscles are primarily

underacting with a decrease in their adduction action. The inferior obliques are secondarily overacting with an increase in their abduction action which tends to carry the eyes up into a divergent position. In downward gaze the superior oblique muscles are secondarily underacting with a decrease in their abduction action. The inferior rectus muscles are secondarily overacting with an increase in their adduction action which tends to carry the eyes down into a convergent position.

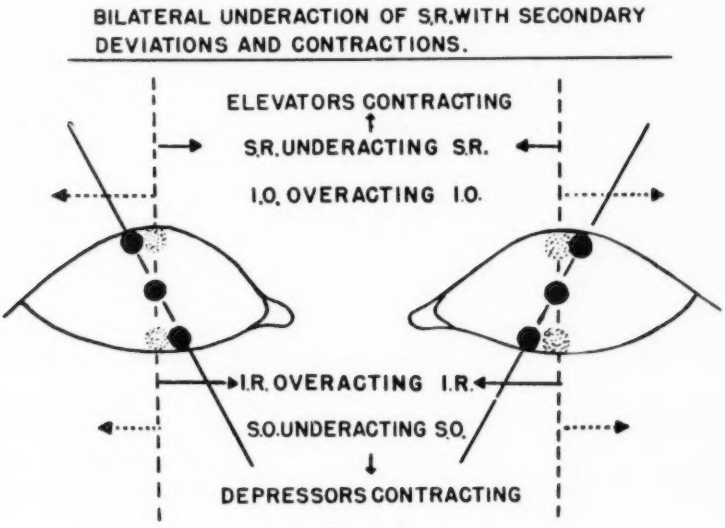

FIGURE 2.

This incomitancy in up-and-down gaze may be important in the management of strabismus as upward gaze is cosmetically more important than downward gaze. From a functional standpoint, the reverse is true.

The compensatory mechanisms that overcome the vertical deviations are the involuntary optomotor reflexes and the vicarious positions of the head. The involuntary optomotor reflexes that produce corrective vertical vergence movements are mainly the vertical component of the fusional reflex. Normal vertical fusional amplitudes are small. High amplitudes indicate the presence of an abnormal vertical deviation and may be evidence that the deviation is of long duration. Large and efficient vertical fusional amplitudes may develop in congenital or early acquired hyperphoria. The vicarious head positions, in some instances, compensate for vertical deviations to a marked degree. The tilting of the head is a near pathognomonic sign of a vertical deviation. The face turn with the raising or lowering of the chin is also a device used to compensate for vertical deviations.

Partial or complete failure of compensatory mechanisms may become evident by an increase in the deviation or diplopia, or possibly by an improved head position.

Early signs of failure are characterized by intermittent vertical tropia, either by subjective diplopia or objective tropia.

These first signs of failure may be confined to one sector of the field of gaze, and in some cases may be reversible. This is especially true in infancy and early childhood, where a vertical deviation may be brought under spontaneous control as the fusional mechanism has developed and as the child has grown. In older patients who have shown evidence of a vertical deviation since early childhood, the tendency appears to have been toward early stabilization. Periods of increased deviation, with heterotropia being manifest in a larger area of the field of binocular single vision, may occur at any age and may be rapid or gradual in progress. This area of heterotropia may involve a small sector or, as is commonly seen, it may involve most of the right or the left field of gaze.

In congenital or early acquired incomitant deviations, there is usually an apparent suppression or disregard of the diplopia as the patient fixates monocularly in the area of heterotropia. This suppression or disregard appears to be facilitated by the sudden wide separation of the visual axis as binocular fixation is given up. Incomitant deviations acquired later in life with about the same area of heterotropia are more apt to develop a reflex type of avoidance of this area. Cases of congenital or early acquired deviations may also show a small sector in which binocular single vision is retained. These cases are relatively uncommon. If this small sector is not in the ordinary used fields of gaze, it may on certain occasions be utilized by marked vicarious head attitudes. Early photographs that show a constant head tilt usually indicate the earlier more constant use of this sector. Straightening of the head may occur on a complete break in fusion or persist until the vertical deviation is corrected.

The determination of the presence, location, and extent of the fields of gaze in which binocular single vision is present or absent is clinically important. Binocular single vision in any area is clinically significant, as it may indicate good fusional ability. Cases in which these areas are not in the primary position or in the ordinarily used fields of gaze may be overlooked and fusional possibilities underestimated. Analysis of these areas is also important in any attempt to enlarge surgically a restricted field of binocular single vision, or to shift this field from a less to a more commonly used field of gaze.

Symposium: Strabismus

PRINCIPLES OF TREATMENT

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THE OBJECTIVES in the treatment of strabismus are good visual acuity in each eye, straight eyes, and good fusional amplitudes, so that secure "binocular single vision" may be the end result.

Recall that the first five to seven years are the years in which binocular habits, good or bad, are being formed. If visual acuity is adequate in each eye, and alignment and motility are satisfactory, binocular single vision has the opportunity to develop and become reasonably well established. On the other hand, if vision is poor in one eye, alignment is poor, or motility unsatisfactory, the opportunity for binocular coordination is not present, and binocular single vision does not exist.

Therefore, the treatment of strabismus should begin as soon as the deviation is apparent. Specifically, a patient with congenital heterotropia should be examined by the age of 6 months and the necessary treatment instituted promptly. If onset is later, immediate treatment should be begun. Recall that the earlier in life treatment is instituted, the easier is the establishment of good binocular habits. Also, fewer adaptations occur, and those present are more easily broken down and overcome. Once instituted, this treatment should be a continuing process until binocular stability has been acquired—this is usually after the age of 8 years, though at times earlier in life.

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The general principles of the treatment of strabismus are (1) to establish (a) the best possible visual acuity O.U. by the early use of occlusion and spectacles where indicated, and (b) the proper ocular alignment and motility by spectacles and surgery; (2) to maintain good visual acuity, alignment and motility by the continuing use of occlusion, spectacles and further surgery as indicated; and (3) to stabilize binocular cooperation by orthoptics at the age of readiness (usually after 6 years), and the considered progressive reduction in the strength of spectacles.

The treatment of strabismus may well be divided into three sections, having to do with (1) the treatment of defective visual acuity—more specifically refractive errors and amblyopia; (2) the treatment of unsatisfactory binocular alignment and motility and (3) the treatment of abnormal or inadequate binocular vision. Thus, in reasonable sequence, the best possible vision must be obtained, the eyes must be properly aligned, and simultaneously or at a later date, they must be taught or encouraged to see together properly.

1. The Treatment of Defective Visual Acuity

As has been pointed out, adequate vision in each eye is important to a functional cure of strabismus. Visual defect may be due to refractive errors, amblyopia ex anopsia, or defective ocular or neural structure.

The adequate correction of the refractive error serves the dual purpose

of giving the best possible visual acuity for distance and near and, at the same time, making that vision available with the optimum amount of accommodative effort. Reasonably satisfactory determination of the refractive error can be made at any age and with fair certainty by the age of 18 months. After making such a determination, moderate or high hyperopia should be fully corrected in esotropia, but undercorrected in exotropia (in order to stimulate accommodation and thus encourage convergence). The early correction of high congenital myopia is important to the cure of the esotropia which is often associated with it. Moderate and high degrees of astigmatism should be corrected in all deviations in order to give the best possible visual acuity for both distance and near.

Anisometropia presents a twofold problem. Not only is it frequently associated with amblyopia, but the refractive dissimilarity is frequently a bar to binocular single vision. While no absolute limits of dissimilarity which would make binocular single vision impossible can be given, a difference of 4 diopters or more is a great obstacle. Thus, if the difference in refractive error is less than 4 diopters, proportionate correction should be placed before each eye and functional cure attempted. If more than 4 diopters, the better eye only may be corrected and functional cure held unlikely.

It should be here stressed that it is the opinion of the panel that spectacles can be worn by children at any age, those from 6 to 18 months using the "infant temple" having an elastic band behind the head, while older children use the conventional temple with full curve over the ears. The use of weak atropine solution every two or three days for a period of several weeks encourages the wearing of spectacles well if difficulty has been encountered.

Since amblyopia is primarily due to lack of use of central vision, forced use of the affected eye is of primary importance. This can best be accomplished by occlusion of the fixating eye and by stimulation of the amblyopic eye. It is now generally accepted that complete occlusion of the fixating eye accomplishes a return of adequate vision faster, and causes less emotional stress in the long run, than does inconstant or incomplete occlusion. Such constant occlusion can best be carried out by adhesive patching of one eye, though mechanical occluders on the spectacles may prove satisfactory. These latter, as well as translucent or opaque material on a lens, allow peeping and thus often defeat their purpose. However, these less complete forms of occlusion may be used as a finishing or holding procedure after almost normal vision has been obtained in the amblyopic eye. Atropinization alone of the fixating eye is seldom an effective treatment of amblyopia.

Often encouragement, bribery, threats, and physical restraint are necessary to enforce adequate occlusion. When considering the difficulties in enforcing occlusion, it should be recalled that an amblyopic eye is neither a satisfactory member of the binocular team nor a satisfactory substitute if the "good" eye later suffers serious visual impairment. Hard work and even emotional upset seem justified if good vision can be obtained. It should also be recalled that vision returns more easily and more quickly during the early years, and often very poorly and slowly, if at all, later. If amblyopia is worth treating, it is worth treating early in life.

The lengths to which occlusion should be carried depend on (1) the age of the patient, (2) the initial vision in the amblyopic eye, (3) the degree of anisometropia, if present, (4) the amount of cooperation obtained, and (5) the

evidences of improvement after a trial period of six weeks. If the child is of school age, the initial vision less than 20/200, and there is no improvement after six weeks of conscientious occlusion, further occlusion will rarely be helpful. On the other hand, if initial vision is fair, anisometropia absent or minimal, and the patient young and cooperative, occlusion should be persisted in until no further improvement is obtained. In those cases having more than one diopter of anisometropia, vision may return but it is difficult to maintain.

In many cases of amblyopia that have improved under treatment, part-time daily occlusion, or periodic occlusion, may be necessary to maintain the improved acuity. After the age of 8 years, such improvement stabilizes and needs less attention. On the other hand, if visual acuity is poor after the age of 8 years, visual return and stabilization are seldom satisfactory.

In addition to occlusion, stimulation of the amblyopic eye by large amounts of television, motion pictures, reading, tracing, needlework, beadwork, etc., are extremely helpful. A child who is satisfied with poor central visual acuity may make no effort to improve, thus making specific stimulation important. Motivation is a considerable factor in visual return.

II. The Treatment of the Deviation and Abnormal Motility

Recall that when eyes are misaligned early in life, normal binocular vision is interrupted, and certain adaptive mechanisms may develop. These abnormalities as described by previous panel members are chiefly suppression and anomalous (abnormal) retinal correspondence. Such abnormalities are more frequently present, more deep-seated, and more difficult to treat if the deviation occurs early in life and is of rather constant degree. It also seems probable that the longer an intermittent strabismus exists, the more likely it is to become a constant deviation. Since these things are true, the early alignment and restoration of normal motility are just as important as was the early treatment of amblyopia.

The treatment of misalignment and abnormal motility is found chiefly in the correction of the refractive error, and in surgery, with some assistance from orthoptics. In discussing this treatment, it seems wise to differentiate briefly the major divisions of strabismus and discuss them separately. These major divisions are convergent, divergent, and vertical strabismus and various combinations of these.

A. For purposes of treatment of esotropia, one must consider the accommodative element (that deviation initiated by accommodative effort, and compensable by the refractive correction), the nonaccommodative element (that deviation not influenced by the accommodation), and the very frequent combination of these two.

The nonaccommodative element requires surgery, supplemented by orthoptics when indicated, for correction, while the accommodative element should be corrected by the proper spectacles and orthoptics. The patients having both accommodative and nonaccommodative elements combined are helped by correction of the refractive error, surgery, and orthoptics.

In treating accommodative esotropia, the full hyperopic correction should be worn from as early in life as possible, thus giving the patient every opportunity for normal binocular vision. The hyperopia which normally increases up to the age of 6 or 7 years often makes stronger glasses necessary during this period. Following this age, hyperopia decreases, binocular habits become more secure, and orthoptics becomes feasible. Then the graded reduction in

the spherical hyperopic correction should be carried out as rapidly as the patient's vision, fusion, and alignment will allow. Many patients may eventually remove their glasses part or all of the time, if they suffer no asthenopia and the eyes continue to function well.

One group of patients having accommodative esotropia may be aligned for both distance and near by wearing the full hyperopic correction. Another group, usually requiring a lesser hyperopic correction, may be straight for distance but convergent for near, even when wearing the full correction. This latter type of accommodative esotropia frequently will benefit from bifocals, which are worn well by children at any age and serve to maintain binocular alignment and the opportunity for binocular single vision for near, as well as for distance. It should be understood that bifocals merely serve to allow binocular single vision as much of the time as possible until nature and orthoptics can improve stability and effect a cure.

The proper correction is estimated by determining the least hyperopic correction at 20 feet and at 13 inches which will obtain at least 20/30 vision, maintain alignment of the visual axes, and avoid asthenopia. If the 20 foot and 13 inch requirements differ more than one diopter, bifocals are indicated. In general, this correction can be gradually removed between the ages of 6 and 12 years. Bifocals are not permanently necessary.

B. Exotropia is roughly divided into the intermittent and the constant deviations. In the intermittent variety, binocular single vision has been present much of the time, so fusion is usually fair, and the patient has the ability to attain straight eyes when conditions are favorable.

When the exotropia is greater for distance than near (the so-called divergence excess type), amblyopia is not severe, suppression for distance gaze is usually present, and retinal correspondence is basically normal. The treatment of the deviation usually consists of surgery, with preoperative and postoperative orthoptics to overcome suppression and improve fusional amplitudes. No great emphasis should be placed on convergence exercises alone, since convergence is usually adequate. Overemphasis on convergence may produce a postoperative esotropia.

When the exotropia or phoria is greater for near than for distance (convergence insufficiency type), the onset of deviation is usually during later childhood or adult life, and good fusion is usually present. Such deviation rarely requires spectacles or surgery, but is greatly benefited by orthoptics and, at times, by attention to the general health and nervous system.

Constant exotropia, often being secondary to defective vision in one eye or secondary to an intermittent exotropia, presents a real problem. Binocular single vision is usually absent and the prognosis for functional cure is poor. Surgery for the best possible binocular alignment and orthoptics when vision permits are the treatment of choice.

In most of the exodeviations, glasses are of little value since the usual refractive error is a small hyperopia. If myopia is present, a full or even overcorrection may stimulate accommodation and thus encourage convergence. This is especially true in the convergence insufficiency secondary to acquired myopia. If the exodeviation is secondary to high degrees of hyperopia or astigmatism, glasses are helpful but some undercorrection of hyperopia should be given.

C. When an incomitant or a vertical element is superimposed upon the hori-

zontal comitant strabismus, surgery is usually necessary. The use of prisms in either horizontal or vertical heterotropia is rarely helpful. Orthoptic procedure may reduce certain cases of dissociated hypertropia but has little influence on either a vertical or a horizontal paresis.

III. The Treatment of Defective Binocular Vision

In heterotropia when binocular alignment has been attained either by glasses, surgery, or both, the stability of binocular vision and improvement of fusional amplitudes become important. Herein is the chief field of usefulness of orthoptics and the orthoptic technician.

Recall that when squint first appears, diplopia and confusion occur and usually last a very short time except in paralytic squint of late onset. This confusion is soon relieved by suppression, and if the deviation persists, amblyopia and abnormal retinal correspondence may occur.

A. The recognition and adequate treatment of abnormal retinal correspondence are essential to the functional cure of squint. This treatment is accomplished in three ways. First, it is most important, by occlusion of one eye, to interrupt the reinforcement of the abnormal retinal correspondence until retinal correspondence has become unstable. This occlusion must be complete and constant. The translucent, so-called occluder lens does not exclude enough form perception and thus often allows the reinforcement of abnormal retinal correspondence. Even when the lens or face occluder is removed temporarily, the eye should be kept closed until occlusion can be resumed.

Secondly, when the patient is sufficiently mature to profit by orthoptics, active binocular stimulation on the major amblyoscope should be done. The treatment consists of simultaneous stimulation of normally corresponding retinal areas and should be carefully supervised by one especially trained in such procedure. While some offices and clinics institute orthoptics early, there is the increasing feeling that few children below the age of 6 years can intelligently cooperate and maintain interest in eye exercises, and often the greatest good cannot be attained until after the age of 8 years. It would seem ideal to give orthoptic exercises in the office frequently (i.e., three to five times a week) for a period of two to four weeks, and gradually reduce the frequency as the patient attains certain skills and can be assigned additional exercises at home. The attainment of this ideal, at times, is impossible.

Thirdly, if the patient is too immature for orthoptics, or if nonsurgical treatment has been unsuccessful, surgery should be performed, attempting the best possible alignment. It is recognized that surgery will often disrupt abnormal retinal correspondence, and if postoperative alignment is good, normal retinal correspondence may develop. It should be emphasized that surgery should not be delayed because of the possible benefits to be derived from orthoptics at some later time. The opportunity for normal binocular vision should be given by the proper alignment of the visual axes as soon as it becomes apparent that other therapy is not feasible or helpful. If surgery has been performed and reasonable alignment obtained, orthoptics should be employed, when feasible, to make binocular vision more secure. On the other hand, when the patient has not been seen until mature enough for orthoptics, orthoptics should be employed first, and surgery later if necessary.

In summary, the treatment of abnormal retinal correspondence consists of interrupting the opportunity for abnormal correspondence by constant

occlusion, active stimulation of normal retinal correspondence if the patient is sufficiently mature for orthoptics, and surgery if the patient is too young for orthoptics, or if orthoptics has not been helpful.

B. Probably the greatest single bar to binocular single vision is persistent suppression. Since suppression exists only in binocular vision, all treatment must be binocular. This treatment falls essentially into three parts.

First, the images before the two eyes should be equalized in clarity by blurring the nonsuppressing eye, using nail polish, Scotch tape, or other material on the spectacle lens, or by increasing the instrument illumination before the suppressing eye when using binocular instruments for treatment.

Second, diplopia should be stimulated by various maneuvers. Physiologic diplopia may be taught as a means of improving the awareness of two eyes. Vertically or horizontally placed prisms will create diplopia and, by gradual reduction of the prism, the images approach and may eventually fuse. A red filter may be placed before the dominant eye and worn constantly. Or, while wearing a red filter, tracing with a red pencil, sewing with red and white thread, making bead patterns with red and varicolored beads, and reading mixed red and black print may all serve to further create binocular awareness and thus overcome suppression.

Finally, superimposition and fusion of images must be stimulated actively on suitable instruments. The major amblyoscope, the cheiroscope and the stereoscope are valuable in so placing sufficiently dissimilar images before each eye that an awareness of two eyes is attained. These targets may be then made gradually more and more alike, until finally, targets identical except for horizontal disparity of certain elements (stereopsis) are being used.

Most of these exercises for suppression may be carried out at home as well as in the office after detailed explanation and instruction to the patient and parents have been given. While it is preferable to eliminate foveal suppression before attempting to improve fusional amplitudes, in certain cases the development of extrafoveal fusion can be carried out in the presence of foveal suppression.

C. Finally, fusional amplitudes must be made adequate so that a pair of eyes may continue to see together even when conditions of fatigue, illness, poor lighting, and the use of the eyes in improper positions are present. Should fusional amplitudes not be made adequate, suppression may recur, the deviation may again take place, and amblyopia may return. The treatment of strabismus is a continuing process until binocular single vision has been finally attained and securely fixed.

Fusional amplitudes may be improved by a host of instruments with a variety of target material and may often be carried out at home. It is felt that the three important factors in the success of such exercises are (1) a thorough understanding on the part of the patient and the parents of the good to be attained and steps in its accomplishment; (2) frequent variations in the type of material and instruments being used in order to maintain interest, and (3) a regular daily schedule for exercises.

The attaining of good fusional amplitudes and the transference of this skill to conditions of everyday life are important in the cure of squint.

While good vision, straight eyes, and good binocular single vision are the desirable goal in the treatment of strabismus, it must be recognized that often this goal cannot be attained. Persistent amblyopia, persistent abnormal retinal correspondence, markedly incomitant deviation, and lack of understanding

and/or cooperation by the patient and parents are major obstacles to obtaining a functional cure of strabismus.

In light of the preceding discussion, it may now be apparent that the treatment of the heterophorias begins in that phase having to do with the treatment of binocular vision, with especial emphasis on overcoming suppression and improving fusion and fusional amplitudes. Occasionally spectacles are helpful, especially in the accommodative esophorias. Rarely is surgery necessary or wise for the heterophorias.

A final word about treatment of squint has to do with the orthoptic technician. Few ophthalmologists have the time, patience, or detailed technical skill to carry out many important steps in the treatment of squint. The orthoptic technician, whose training is specific for these things, is better qualified to do so. She may carry out or help with the treatment of amblyopia. She assists by determining the state of the binocular vision. If abnormal retinal correspondence and suppression are present, she can best carry through the details of their treatment. The improving of fusion and fusional amplitudes are within her ken and may respond better to her considered care than to the less attentive ministrations of the busy ophthalmologist. However, every technician must work under the guidance and supervision of the ophthalmologist, and in this relationship, the ophthalmologist must be alert to the situation at all times and be well informed so that his supervision is meaningful.

Final emphasis must be given to the importance of instituting the treatment of strabismus as early in life as possible and continuing until a functional cure has been accomplished, if possible.

Symposium: Strabismus

SURGERY IN THE TREATMENT OF STRABISMUS

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THE MEMBERS of the panel decided that an expression of opinion of the principles involved in the surgery of strabismus would be of general interest and value. It was thought impractical and inadvisable to attempt to discuss individual cases or to summarize the results of any specific operative procedure. Not all cases of strabismus will have, as their final outcome, single binocular vision, although that is the ideal to be sought by all ophthalmologists. If this ideal is unattainable, then our goal should be eyes in good cosmetic alignment with normal visual acuity.

INDICATIONS FOR SURGERY

Esotropia

Accommodative esotropia rarely, if ever, requires surgery. The purely nonaccommodative strabismus requires the surgical correction of the total deviation. The combined accommodative and nonaccommodative esotropia requires correction of only the nonaccommodative portion.

Exotropia

Constant exotropia requires surgical correction, as nonsurgical methods alone are ineffective. Intermittent exotropia will often require operative interference to improve the cosmetic appearance or forestall the development of a later exotropia.

Hypertropia

In this condition, an operation is indicated for cosmetic reasons or if there is reasonable hope of affecting a functional cure. The so-called dissociated vertical divergence or alternating sursumduction should not have surgical interference.

SURGICAL PROCEDURES

Surgical procedures on the extraocular muscles may be divided into three major classes: (1) shortening or lengthening; (2) insertional changes, and (3) transplantation of a muscle or a portion.

The terminology "shortening or lengthening" is preferable to "strengthening or weakening" as there is some question whether a shortening procedure actually increases the power of a muscle. Similarly, it is questionable whether a lengthening procedure actually decreases the power of a muscle. The shortening procedures commonly employed are resection, tuck and cinch. The lengthening procedures are the various forms of tenotomies—central, marginal, fenestrating and free. Insertional changes are exemplified by the recession and advancement and the guarded tenotomy. Transplantation of a muscle, or a portion, is utilized to replace, or augment, the action of a paralyzed muscle.

CHANGES RESULTING FROM SURGICAL PROCEDURES

There are at least three fundamental changes which occur following any surgical procedure upon the extraocular muscles.

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1. Change in the alignment of the visual axes. The correction of a misalignment is accomplished by shifting the visual axes in relation to each other.

2. An alteration in the mechanics of action of the operated muscle. The effectiveness of any given muscle activity (operated or unoperated) is determined, at least in part, by the apposition of the muscle on the globe and its relation to its origin and insertion and center of rotation. Thus, any alteration in the insertion of a muscle, or any change in its length, will alter the amount and direction of rotation of the globe when that muscle contracts with the same force as it did prior to the surgical procedure.

3. An alteration in the mechanics of action of the unoperated muscles. When a horizontal rectus muscle is operated upon, there are three possible effects on the unoperated muscles. A. Any alteration in the insertion of a muscle or a change in its length will alter the rotational effectiveness of its direct antagonist. B. When a muscle of the fixating eye is operated upon, the rotational effectiveness of its yoke muscle is also changed in accord with Hering's law. C. By changing the horizontal deviation, the effectiveness of the vertically acting muscles may be enhanced or minimized. In the adducted position, the obliques have their most effective vertical action, while in the abducted position, the vertical rectus muscles are most effective as elevators or depressors.

FACTORS INFLUENCING THE SURGICAL APPROACH AND RESULTS

Age for Surgical Interference

Surgery may be performed as soon as a proper diagnosis has been made and it is obvious that an operation is necessary. Since the opportunity for the development of binocular single vision is important, a patient with congenital esotropia should be operated upon early. In those with deviations arising after the age of 2 years, surgery may be deferred to permit more thorough study and nonsurgical treatment since some binocular cooperation has already been present. The adverse psychological effect of the deviation on the patient and on the parents is a further indication for early surgery. There is no upper age limit for strabismus surgery. However, the probability of obtaining a functional cure later in life is small. In the adult, the duration of the deviation will determine the procedure somewhat since esotropia of long standing will result in anatomic changes in the muscles, capsule and fascia. Therefore, more extensive operative interference will be necessary for the correction of the deviation.

Functional versus Cosmetic Effect

As previously mentioned, the ultimate goal of the ophthalmologist is the restoration of binocular vision in every case of strabismus. In accomplishing this, the normalizing of motility with the least possible disturbance in the palpebral fissure is desired. Frequently, this goal is not possible for a variety of reasons, such as deep amblyopia, an irreversible anomalous correspondence, or a high degree of anisometropia. When it becomes obvious that the only hope is for a cosmetic alignment, the type of surgery may vary somewhat from that in which a functional result is anticipated. If the patient has, for example, a strabismus in which there is no possibility of a functional cure, one is not too concerned with the production of slightly faulty motility in the convergent eye provided good alignment is obtained in the primary position. However, in the absence of good vision, which will assist in stabilizing the surgical result, esodeviations corrected in children may become divergent later in life and exodeviations, after correction, tend to recur. Since the

extraocular muscles as well as the levator influence the width of the palpebral fissure and the prominence of the globe, a too extensive procedure on one eye may produce an unsatisfactory cosmetic result.

Anatomic Factors

For many years, the anatomic theory of strabismus has received some support. The proponents of this concept attribute many deviations to abnormalities in the muscles, capsule and check ligaments. Obviously, the major abnormalities in the muscles or capsule which grossly restrict the motility of the eye, such as Duane's retraction syndrome, are of great significance and must be considered separately. But minor anatomic changes in the capsule, fascia and the presence of "footplates" play an unimportant part in the development of most cases of strabismus. It is recognized that at the time of surgery one finds individual variations of the size, thickness and elasticity of the muscles or fascia. However, the significance of these findings in determining the particular surgery to be done is questionable. Under anesthesia, the majority of esodeviations disappear or become exodeviations, which suggests the minor role played by anatomic factors in misalignment. Thus, the position of the eyes under anesthesia should not influence us unduly to change our preoperative decisions. However, it should be emphasized that the surgical result is influenced by the degree to which one separates the intermuscular membrane, the check ligaments and the posterior attachments of the muscle to the globe. The ultimate effect is greater with a wider dissection than if the surgery is restricted only to the insertion of the muscle.

Sensory Factors

Amblyopia, deep-seated abnormal retinal correspondence and suppression resistant to other treatment are no contraindications to surgical intervention. As Dr. Costenbader has pointed out, surgery may favorably alter the retinal correspondence. An attempt should be made to produce alignment of the visual axes even if these are present, although, as previously stated, the results may be purely cosmetic. The immediate amount of correction obtained by any given procedure is not influenced by any of these sensory factors. If deep amblyopia and eccentric fixation are present, the stabilizing influence of an adequate sensory mechanism will not be present and the greater possibility of future divergence must be considered. The most desirable result in these cases is a small residual esodeviation because of a tendency of these eyes to diverge in adult life. If one obtains a slight exodeviation, the final postoperative outcome will be an exodeviation of increasing magnitude.

Optical Factors

Dr. Adler has divided esotropia into four major groups. Surgical treatment of deviations due to sensory disturbances has been discussed. Those cases that are purely accommodative have no deviation while wearing full hyperopic correction and, hence, surgery is contraindicated. Surgery is no substitute for spectacles! These patients lend themselves admirably to the nonsurgical treatment outlined by Dr. Costenbader. If the deviation without glasses is neutralized by operation, an exotropia will develop when the hyperopic correction has to be worn at a later date for visual improvement.

Those cases with no accommodative element require surgery for a neutralization of the deviation. Those children who have a combination of accommodative and other factors have a residual deviation even though wearing their full hyperopic correction. Only the residual

deviation should be corrected surgically if binocular single vision is to be obtained. Since in this type the deviation is greater without correction, the surgical approach may be a little less conservative. A reduction in the amount of the hyperopic correction will neutralize a slight surgical overcorrection until binocular single vision has an opportunity to become established. It must be remembered that those patients having high degrees of hyperopia, astigmatism or anisometropia tend to develop exotropia later in life.

Laterality of Surgery

Since in most cases of comitant heterotropia there are excesses and deficiencies of the rotations, the ideal surgical procedure is that which corrects the misalignment of the eyes while normalizing the rotations. If this principle is used as a guide in the choice of the surgical procedures, the question of preference between surgery on one or both eyes can be resolved in each individual case. The tendons of those muscles which rotate the globe excessively should be recessed and/or the tendons of the muscles which rotate the globe insufficiently should be shortened.

If an attempt is made to correct a large deviation by recessing a single muscle too far, a weakened adduction may result. This may lead to incomitance, faulty versions and a deficiency of the convergence movements with resulting secondary exotropia. Extensive recessions may also lead to an unsightly widening of the palpebral fissure.

Available evidence indicates that the results of the shortening procedures are less consistent than those obtained by lengthening procedures or changes in insertion. They are more difficult to modify in the event of overcorrection and must be more extensive to produce a comparable result.

To avoid the undesirable consequence of a too extensive procedure on a single muscle, the surgery may be bilateral and symmetrical, thus performing a lesser amount of surgery on corresponding muscles in each eye in either one or two sessions. This has the advantage that the correction of the misalignment of the eyes and of the faulty rotations is achieved by symmetrical procedures which safeguard the proper motility of the eyes. Or one may elect to operate an antagonistic muscle of the deviated eye, for example performing a recession of the medial and a resection of the lateral rectus muscles. In so doing, the effect of each operation is greatly enhanced and less surgery on each individual muscle is required to obtain a favorable result. This type of procedure has many advocates and can be highly recommended in cases in which only a cosmetic result may be expected and, more especially, in operating on adults. In applying the recession-resection type of operation to children, great care should be taken to avoid defective rotations since this represents a serious obstacle to the regaining of binocular single vision and may lead to postoperative exotropia.

Another form of bilateral operation is the procedure in which resection of a muscle is combined with a recession of its yoke. This is used more especially when there is a paresis of a muscle with secondary overaction of the yoke muscle.

In brief, regarding the laterality of operations, one can state that symmetrical procedures which safeguard normal motility of the eyes should be given preference, particularly in younger children. However, the monocular recession-resection approach may be satisfactory especially in strictly monocular squints and in older patients in whom there is no prospect of regaining normal binocular cooperation.

Magnitude of Deviation

It seems unwise to attempt to estimate the effect in degrees of the correction which will be produced by a given number of millimeters of surgery upon the muscle or tendon. The age of the patient, the amount of deviation, the visual acuity, refractive error, state of the binocular vision, versions, and a host of other factors must be considered in any individual case. Equally important is the technic of the surgeon and how effectively it is applied. There is no rule of thumb for estimating the amount of surgery to be performed. However, it does seem probable that the larger the deviation, the greater the correction from a given amount of surgery.

THE VERTICAL COMPONENT IN STRABISMUS SURGERY

The recognition of the significance of the vertical component in a horizontal deviation is imperative before contemplating surgery. Examination will determine the relative importance of the vertical and horizontal components of a given deviation. If the vertical deviation is small and the horizontal large, the horizontal deviation should be corrected first. Any small residual vertical deviation may be corrected with prisms, if binocular single vision is possible. If the vertical component is of some magnitude, it should be corrected first or at the same time as the horizontal deviation.

Elevation in adduction due to an overaction of the inferior oblique muscle is found commonly in esotropia. This may disappear spontaneously or following the neutralization of the horizontal deviation. Therefore, a recession of the inferior oblique muscle should not be performed until at least a major portion of the esotropia has been corrected. If the overaction of this muscle is of sufficient degree to preclude the disappearance of the vertical deviation after the correction of the horizontal deviation, then this action must be reduced to normal.

Most large vertical deviations are on a paretic basis and the differential diagnosis may be difficult due to the development of contractures and comitance. If there is a marked deficiency of rotation due to a paralysis of a vertically acting muscle, a shortening of this muscle with a recession of its direct antagonist is necessary in order that the eyes may assume a position in which binocular single vision is possible. However, if the paresis is slight and thus there is little or no impairment in ductions, the fixating eye determines the primary approach.

In intermittent exotropia, one commonly finds a vertical component. During the divergent phase, one often sees an elevation of the nonfixating eye. This vertical element will disappear after the correction of the exotropia. Therefore, the primary procedure of choice is a bilateral recession of the lateral rectus muscles.

CONCLUSIONS

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STRABISMUS is a manifest deviation of the visual axes in one or more positions of gaze. This deviation is not the underlying abnormality; rather it is the chief sign of a number of pathologic processes. At present a precise classification is not feasible, but division into comitant and incomitant types is useful. Also, there are some factors, such as abnormal degrees of accommodative effort, which may influence both the direction and the magnitude of the deviation. Consideration of these factors permits some subdivision of cases for purposes of treatment.

There seems no fundamental difference between exotropia and esotropia other than the direction of the deviation. Coexisting vertical deviations are common in strabismus and require special analysis. They are not necessarily of paretic origin. A vertical deviation may be exaggerated when one eye is persistently deviated to a position favorable to the action of a vertically acting muscle. On the other hand, a relatively small vertical deviation may disrupt fusion and thereby precipitate a horizontal deviation of such magnitude that the primary vertical defect easily may be overlooked.

No new qualities are added to the act of vision in patients with strabismus; rather, the physiopathologic changes in these patients seem aberrations of the normal. Knowledge of the components of normal binocular vision, therefore, is a prerequisite to the understanding of strabismus. These include useful vision and similar images in each eye, normal retinal correspondence, and simultaneous binocular awareness in the central field of vision. There must also be approximate parallelism of the visual axes in distant gaze. Vergences must be ample to compensate for any deviation and still permit comfortable binocular single vision at all distances. Rotations must be full and comitant. Good coordination between the accommodative and vergence mechanisms is essential for comfortable binocular vision. The basic objective of the examination of a patient suspected of having an anomaly of binocular vision is to determine the status of these components, utilizing methods of examination most suitable to the case. These anomalies are so complex and the circumstances of examination vary so markedly that it is not possible to recommend a routine of examination or a battery of tests which would be applicable to every patient.

If the normal mechanism of binocular vision cannot function early in life, certain adaptive processes develop which largely relieve the child of the symptoms and permit some degree of binocular single vision in spite of a persistent deviation. Sensory adaptive mechanisms,

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like suppression and abnormal retinal correspondence, seem the consequence rather than the cause of misalignment of the visual axes, but they cannot be ignored. Their recognition is important because they may be major obstacles to the restoration of normal binocular vision. Early treatment is desirable to prevent their development and stabilization.

The ultimate goal of treatment is normalization of the essential components of binocular vision. It is seldom that these are established simultaneously. Some phases of treatment, such as orthoptic training, are not feasible in very young children, whereas others, such as correction of refractive error and establishment of useful vision in each eye by occlusion can be undertaken early. As each component is established, it must be maintained until binocular vision becomes stabilized. Optical, orthoptic, and surgical methods serve different and specific purposes and are to be considered as supplementary rather than alternative methods of treatment.

The major indication for surgery is persistent misalignment of the visual axes which cannot be corrected by other means. Normalization of rotations is also a goal. In this respect, it must be recognized that surgery not only alters the rotational effectiveness of the operated muscles but it also may affect the mechanism of action of other muscles. Anatomy, age, sensory, refractive and other factors influence the ultimate results of surgery. In determining the type, the amount of surgery, and the muscle to be operated upon in an individual case, these factors must be considered as well as the magnitude and direction of the deviation.

MALIGNANT EXOPHTHALMOS WITH GLAUCOMA
(A Clinicopathologic Case Report)

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L. B., MALE, colored, 55 years old, was admitted to Crile Veterans Administration Hospital, Cleveland, on July 12, 1950.

He complained of pain and swelling of both eyes of seven weeks' duration and diminished vision of twenty-four hours' duration. His physical examination was negative, except for a nodule in the right lobe of the thyroid gland and a blood pressure of 170/100. Ocular examination revealed bilateral exophthalmos of 24 mm. Hertel, tense swollen eyelids, protruding and chemotic lower conjunctiva and restricted ocular motility (figs. 1 and 2). The pupils measured 3 mm. in diameter and responded sluggishly to light and accommodation. The anterior chambers were of normal depth. The corneas were slightly hazy but could be cleared sufficiently with glycerin to permit examination of fundi. The fundi were negative except for a suggestion of cupping of the right disc. Vision was OD 20/40 plus 1 with pinhole 20/20, OS 20/40 minus 1 with pinhole 20/25 minus 1.

Routine laboratory studies and x-rays of chest, skull and orbits were normal.

FIGURE 1.

FIGURE 2.

A nodule was palpated in the right lobe of the thyroid. The basal metabolism rate was plus 2. Electrocardiograms showed left ventricular strain. Ocular tension was greater than the Schiötz tonometer could register (85+). Form fields were normal. Intensive miotic therapy reduced the tension to 50 mm. Hg in both eyes, but the exophthalmos and the edema of the conjunctiva persisted bilaterally. The swelling of the lids and conjunctiva was greater on the

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right side. Miotics held the tension in the right eye between 30 and 40 mm. Hg. The tension on the left eye hovered around 50 mm. Hg and the vision dropped to 20/80. The patient complained of considerable ocular pain. Iridencleisis was performed on the left eye on July 20, 1950. Following this operation, the tension of the left eye dropped to 30 mm. Hg but even with miotics the vision slowly dropped to 20/200—20/800, where it has remained.

From admission to February 14, 1951, the following operations were performed. Iridencleisis OS, external canthotomy OD with lineal incision of conjunctiva, incision and drainage of conjunctiva OS, incision and drainage of conjunctiva with rubber drain OD, craniotomy and bilateral deroofing of orbits (Naffziger procedure), excision of conjunctiva and subconjunctival tissue OD, incision and drainage of conjunctiva OS, excision of conjunctiva OU and biopsy of subconjunctival nodule OD, excision of conjunctiva OS, paracentesis of anterior chamber OD, sclerocorneal trephination OD.

Medical treatment consisted of the exhibition of thyroid in varying doses from 0.5 to 3.0 grains daily from October 16, 1950 to January 22, 1951, during which period the basal metabolism rate varied from minus 15 to plus 33. Cortison was given parenterally for two weeks without visible benefit. The blood pressure rose moderately during administration of cortisone. The blood pressure was never less than 150/90. X-ray radiation of the pituitary body was noneffective.

The form fields of the left eye became generally contracted and there was a central scotoma. The right eye had a paracentral scotoma before the trephine operation. The deroofing operation relieved the exophthalmos for several weeks. The excisions of the conjunctiva reduced the ectropion of the lower conjunctiva.

The right eye was trephined because of persistent ocular pain, paracentral scotoma and failing vision. The intraocular tension fell to 18 mm. Hg and 20/50 vision remained. Four weeks after this filtering operation, the choroid became detached on the nasal side of the right eye. The detachment flattened with bed rest and central vision held at 20/70 with a temporal field defect. Eight weeks after the Elliot trephine operation, the right inferior temporal branch of the inferior retinal artery became occluded. Closure of the retinal artery became complete a week later, although the patient was treated heavily with dicumarol. Central vision was lost permanently.

On June 11, 1951, the patient was discharged after eleven months in the hospital. His vision was OD amaurosis, OS 20/200, corrected to 20/100. The left lens was becoming cataractous. The ocular tension was OD 18 mm. Hg, OS 22 mm. Hg. The exophthalmos and the chemosis of the conjunctiva were diminishing. The patient entered a remission. Exophthalmos was greatly reduced. The eyelids and conjunctiva assumed a nearly normal appearance. Ocular motility improved.

Two months later, on August 17, 1951, slight swelling of the right eye was noticed. Ten days later, exophthalmos had increased, the palpebral conjunctiva was everted and swollen, and the right eye was painful. Ocular tension was 32 mm. Hg. The left eye was not affected.

Pain gradually disappeared and there was slight lessening of chemosis of the eyelids, following radiation of the pituitary and right orbit. On October 14, 1951, ocular tension was OD 32 mm. Hg, OS 23 mm. Hg Schiøtz. Vision OS was 20/200 corrected. The right eye was immobile.

PATHOLOGIC REPORT

A biopsy was taken from the right orbit and from the left levator palpebrae superioris during the deroofing operation. Microscopic examination of the biopsy of muscle revealed edematous, fragmented, vacuolated, striated muscle with poor markings and a moderate lymphocytic cellular infiltration.

A consolidated report on the various biopsies and excisions of everted lower conjunctiva follows: The epithelium encountered was a stratified squamous type, indicating that at the area of excision tarsal conjunctiva was removed. In certain areas, squamous epithelium showed rete pegs that extended downward into the substantia propria. Keratinization was patchy. Goblet cells were not noted in this edematous epithelium. Under the epithelium, edema and hyperemia were prominent. The conjunctival stroma contained amorphous acidophilic material suggestive of organizing fluid exudate in which the swollen connective tissue fibers of the conjunctival stroma were embedded. The edema was greater in the deep stroma than beneath the epithelial surface.

The cellular infiltration was of the subacute or chronic type. Plasma cells predominated. Lymphocytic cells were found in clumps and scattered throughout many fields. Some neutrophils were noted in superficial areas. An isolated inflamed glandular structure was noted.

The arterioles showed swollen thick adventitia and media, producing in many instances narrow lumens. The endothelial cells were swollen and had large nuclei which frequently exhibited loss of polarity. The arterioles were more edematous than hyperplastic.

SUMMARY

This is a case of malignant exophthalmos with severe glaucoma of undetermined origin and with edema of orbits, eyelids and conjunctiva. A thyrotoxic basis has to be considered. The effect of pressure was obvious. The histologic details of the everted conjunctiva were those of a reaction to obstruction, chronic inflammation and exposure to the atmosphere. Relief from deroofing the orbits and excision of redundant conjunctiva was temporary. The glaucoma caused loss of vision and field defects. A mild persistent hyperpiesis was not reflected in the eyes. The cause of the remission of both eyes, and of the relapse of the patient's right eye and not his left eye, is obscure. Radiation of the pituitary gland may have influenced the remission. The prognosis is bad.

Symposium: The Modern Treatment of Maxillary Sinusitis

NONSURGICAL TREATMENT OF ACUTE AND CHRONIC MAXILLARY SINUSITIS

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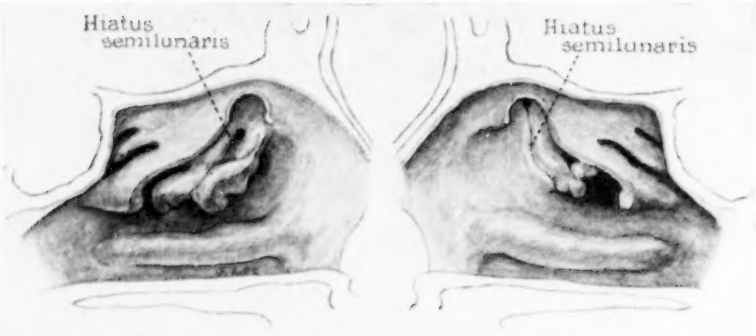

FIG. 1—Blocking polyps. Polyp formation obstructing the drainage of both maxillary sinuses. In the specimen illustrated the mucosa of both antra was thickened and the gross appearance was that of a chronic inflammatory process. (From Van Alyea.[1])

In the management of maxillary sinusitis, the goal of the rhinologist is to alleviate symptoms, promote an early termination of the infection, prevent complications and minimize the likelihood of recurrence.

In the early stages of acute maxillary sinusitis, very little local treatment is indicated or of value aside from those measures which are applied for the relief of pain and nasal blockage. Pain is relieved by analgesics and heat, either dry or moist, over the affected area. The infrared unit is ideal for this purpose and may be used almost constantly. Further relief may be obtained by the careful application of a pack containing a mild anesthetic and shrinking solution in the neighborhood of the drainage area of the sinus. Nose drops with a shrinking action open up the nasal spaces and thus aid somewhat in sinus drainage, but it is questionable whether their use in any way shortens the course of the disease. Their continued use should be discouraged.

Later, as the acute congestion subsides, sinus lavage is employed, and this may be repeated every three or four days until a cure is attained.

Should the infection persist, measures to improve the drainage space, such as infraction of the middle turbinate and removal of blocking polyps, may be indicated (fig. 1). Attention should also be directed to the ethmoid sinuses and the

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FIG. 2—Deviated septum crowding left middle turbinate against the lateral nasal wall. The right middle turbinate contains large cells. Anatomic defects as depicted in this illustration could be disturbing factors in the drainage of cavities opening in the middle meatus. (From Van Alyea.[1])

FIG. 3—Cannulas in maxillary ostium and membranous area. The cannulas are separated by the uncinate process, unusually long in the specimen illustrated. (From Van Alyea.[1])

teeth, for many cases of long-standing maxillary sinusitis have been traced to overlooked infection of ethmoidal or dental origin.

Parenteral penicillin and other antibiotics on occasion are effective aids in the management of acute sinusitis, particularly in the more severe types, but they should not be expected entirely to clear up cases of sinusitis when used as the sole measure of therapy. Cases which have failed to show improvement after several days or weeks of antibiotic therapy are commonly encountered by rhinologists. As a rule, nothing has been done in these cases to improve sinus drainage, which is most needed to effect a cure. The antibiotics tend to keep the infection localized and under control, but it is regarded by rhinologists generally as far better practice to withhold their use in the ordinary case until such time as the other available measures fail to prove effective.

Penicillin and other antimicrobial preparations instilled into the sinus after lavage are of no appreciable value, for the micro-organisms responsible for the disease are located at various depths in the sinus mucosa and thus can be reached only by blood-borne remedies.

FIG. 4—Frontal section of a specimen showing cannula *1*, in maxillary ostium; cannula *2*, in membranous area. (From Van Alyea.[1])

CHRONIC SINUSITIS

In the management of chronic sinusitis simple measures, if properly carried out, suffice in a majority of cases. Since the inception and maintenance of the

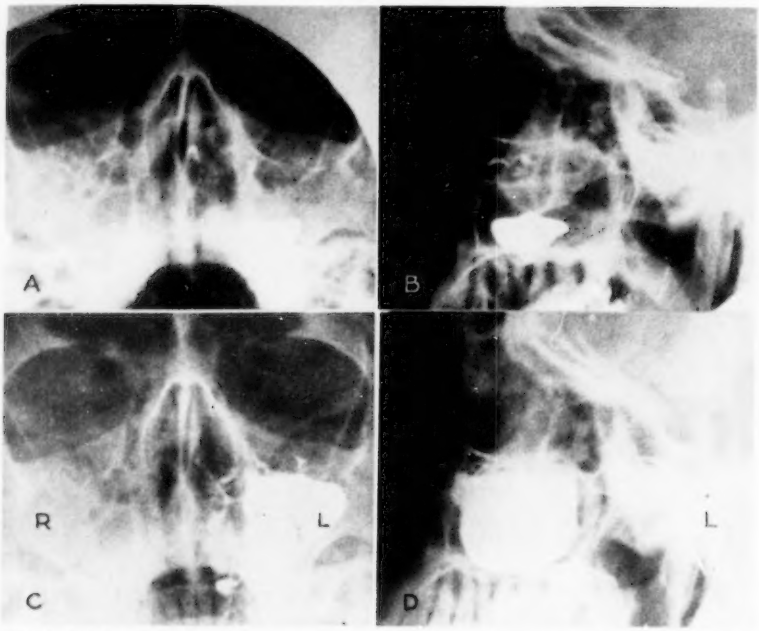

FIG. 5.—Marked thickening of the antral mucosa is shown in the upper two views taken February 7, 1944. Absence of edema may be noted in lower films taken April 10, 1944, two months later. All evidence of chronic sinusitis had disappeared by that time. (From Van Alyea.[3])

disease is in most instances due to blocked drainage passageways, efforts are concentrated on correction of such defects as may be responsible for the drainage impairment.

In most of the cases which last a few months or even years, the ostium itself is not at fault. The trouble lies rather in the relations of the tissues adjacent to the ostium.

Considerable improvement in many cases follows minor procedures which unblock the middle meatus. In some instances a septal resection is required so as to permit adequate infraction of the turbinate; in others, turbinal cells must be obliterated (fig. 2).

Allergy plays an important role in most cases of recurrent or chronic sinusitis both in the etiology and in the maintenance of the attack, and many of the stubborn cases of sinusitis are those in which the allergy is not under control. Attention must also be directed to other possible systemic disorders and allied inflammatory conditions in other sinuses as possible contributing factors to the persistence of the infection.

At the onset, diagnostic lavage is carried out in those cases in which sinusitis is suspected or revealed by x-ray or other diagnostic measures (figs. 3 and 4). Irrigation is repeated at intervals, once the diagnosis is made. This procedure serves the dual function of ridding the cavity of toxic secretions and throwing light on the progress of the disease. Further information is gained by occasional roentgenologic studies with the sinus filled with iodized oil. Frontal and lateral views are taken, and in these,

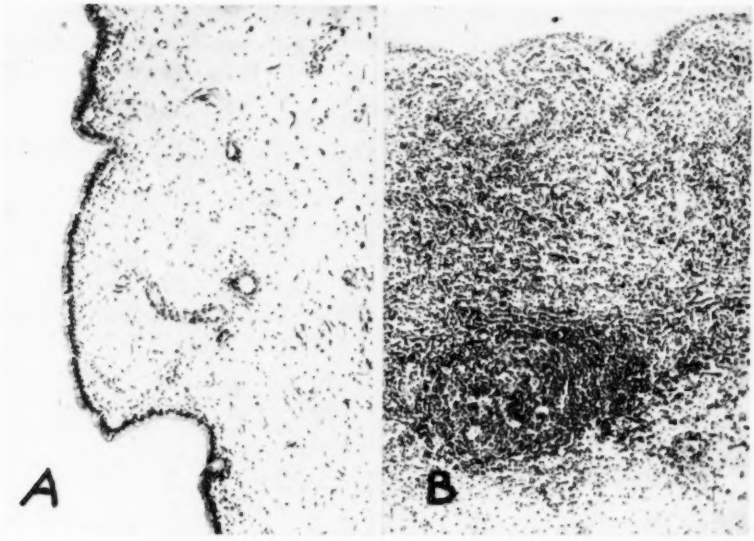

FIG. 6.—Photomicrograph of antral mucosa. A. Chronic simple inflammation. B. Chronic suppurative inflammation with lymphoid follicle. (From Van Alyea[1])

changes in the thickness of the sinus mucosa may be determined (fig. 5). It has been noted repeatedly that as the mucosal edema recedes, there is a general improvement in the symptoms.

Cases which respond well to irrigation therapy are those in which adequate drainage has been established. In the others, drainage defects must be corrected before a cure may be obtained.

Cases in which the ostium is constricted to a minimum due to long-standing chronic edema fail to obtain much relief from procedures which unblock the middle meatus. This condition is determined at the time of irrigation, as the constricted ostium prevents a free return flow of the irrigating solution. This, in certain instances, is due to the presence of a polyp in the ostium or in the sinus itself which presses valvelike against the ostium, but in most cases the opening is constricted by swelling of the osteal mucosa which is involved in the same edematous process which affects the entire membranous lining of the cavity. Also in these cases the mucosa lining the infundibulum is involved; in some, to the extent of a complete sealing off of this channel (fig. 6).

In cases of this type, sinus irrigation is practically a worthless procedure and little time is to be consumed with this form of therapy. If early relief is not obtained, an adjunct drainage opening is required. This is placed in the inferior meatal nasoantral wall as near the sinus floor as possible. The success attained by intranasal antrostomy when properly carried out is immediate and lasting, and with its widespread adoption of the past few years it has practically eliminated the employment of radical surgical procedures in treatment of maxillary sinusitis.

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Symposium: The Modern Treatment of Maxillary Sinusitis

DIAGNOSIS OF CHRONIC MAXILLARY SINUSITIS: INDICATIONS FOR SURGERY

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IT IS a rather common experience of otolaryngologists to see patients with either a referring or self-made diagnosis of chronic sinusitis which, upon examination, proves erroneous. Headache, so frequently associated in the lay mind with sinusitis, is so common a denominator of many disorders that it hardly can be considered as specifically indicative of sinus involvement. Likewise, nasal obstruction and nasal and postnasal discharge may be due to other conditions, such as allergic states, deviated septa, adenoids, nasopharyngeal cysts, or tumors, or metabolic or systemic disorders. These must be considered and excluded before arriving at a diagnosis of chronic sinusitis. While this, of course, pertains to the broader field of sinusitis, it is applicable to the specific area under discussion, the maxillary sinus.

In making a diagnosis of chronic sinusitis of the maxillary antrum, a history of frequent colds, nasal and postnasal discharge, varying degrees of nasal obstruction and anosmia is suggestive. A searching inquiry into both the personal and family history as to the incidence of allergy is most important. Even what appears to be a frankly purulent case of sinusitis may have an allergic background. As previously referred to, the possibility of some general constitutional or metabolic condition, or dietary or environmental factor should be kept in mind.

Examination may, or may not, reveal purulent or mucopurulent discharge coming from the middle meatus. The middle turbinate may appear red and rather dry and covered with a scab, or be large and hyperplastic. Polypi may be noted, generally in allergic cases. Postnasal discharge usually is present. Transillumination may be helpful if positive. Roentgenograms are most important in making a diagnosis but one must keep in mind the transitory changes in the lining mucosa seen often in allergic states. With a purulent discharge the possibility of infection from the teeth must be considered and the roentgenograms should include dental films. At times the use of lipiodol as a contrast media is helpful and noting the emptying time of the antrum may give valuable information.

While one may not know the exact role played by the eosinophils, the finding of them in cytologic examination is generally indicative of an allergic state and justifies, in my opinion, the routine taking of nasal smears.

Diagnostic irrigation may be helpful, especially if the roentgenogram reveals a fluid level.

Having made a diagnosis of chronic maxillary sinusitis, one then must consider the possible etiologic factors be-

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fore rational therapy can be instituted. Is it dental in origin, allergic, metabolic, or due to previous infections, possibly repeated? And has it been prevented from resolution by inadequate nasal ventilation or disturbed air currents in the nose? At times this may be facilitated by correction of a high deviation of the septum or by infraction of a middle turbinate.

In a panel discussion on sinusitis at the 1938 meeting of this Academy, "Indications for Surgery" was assigned to me. Consequently I was interested in reviewing the material presented on that program and was pleased and somewhat surprised to note that so much of what was said at that time still holds true today. Fourteen years ago we were cognizant of the overoperating which had been too prevalent in these cases, and were realizing the importance of more carefully determining the underlying causes of these conditions. A better appreciation of nasal physiology and pathology had already begun to dim the enthusiasm for so much radical surgery and to indicate the desirability of a rational and conservative attitude towards the management of these cases.

Let me quote from a paragraph on "Chronic Purulent Sinusitis" in the 1938 panel:

> In certain of these cases proper medical care, especially attention to endocrine dyscrasias, may prove beneficial. In children especially, correction of dietary errors and removal of tonsils and adenoids frequently will be followed by resolution of the sinusitis. Headache, discharge, nasal obstruction, laryngeal or pulmonary symptoms, or evidence of focal infection may indicate the advisability of operative interference. Simpler procedures, if at all consistent with the clinical and x-ray picture, are more satisfactory. Radical operation such as the Caldwell-Luc, should be done in these cases only when there is definite evidence of marked mucosal pathological changes which probably would not resolve following simple antrostomy or after the intranasal procedure has proven futile.

This hardly would be criticized today although there might be some doubt as to our ability to determine the irreversibility of mucosal changes without a trial of more conservative measures, in most cases.

If determined to be due to dental infection I can again quote from the 1938 paper as to the course to be followed.

> In maxillary sinusitis of dental origin, characterized by purulent and rather foul discharge, if the condition does not resolve after removal of the dental infection and conservative treatment of the antrum, a large intranasal antrostomy generally suffices. In some cases there may be sufficient pathological changes in the floor of the antrum to warrant operation through the canine fossa. But, as a rule, the intra-nasal procedure should be tried first.

In the vast majority of antro-alveolar fistulas, antral surgery is indicated, as control of the sinusitis generally is the crux of the situation. Many cases, seen early, will require only a well-performed intranasal procedure. The older and more complicated cases are best managed by the Caldwell-Luc operation, combined with a plastic procedure designed to meet the requirements of the individual case.

In the nondental but predominantly purulent type of case, without evidence of polypi, such as may be due to repeated infection or may follow some general or metabolic condition which fails to respond to more conservative measures, a generous intranasal window often proves satisfactory.

If the case be allergic in origin, as many of them are, obviously allergic studies are indicated. It should be emphasized that skin tests are only a small part of such an investigation, that the history and a period of trial on an avoidance regime often gives more accurate information. Likewise, it is important to consider the vascular and the psychological status of the patient. I have found

that close association with an allergist and an internist in these problems has been most helpful.

Naturally one cannot expect polypi, unless extremely minimal, to disappear spontaneously following an allergic regime, and their removal generally would be indicated. Likewise the relief from obstruction afforded at times by electrocoagulation of inferior turbinates or the snaring of hypertrophied posterior tips justifies these procedures when carried out in conjunction with allergic therapy.

Regarding surgery of the antrum, in these cases, again we may quote from 1938:

> Many of these cases are allergic. In these, indicated allergic treatment must be carried out. Surgery is justified despite the presence of allergy, only if the clinical picture, after careful study, would suggest operative interference anyway, if the case were not allergic. . . . Generally, in these cases, a combination of allergic treatment and rational surgery gives the best results.

While the language here may be somewhat vague, the import is that surgical measures may be indicated when symptoms persist despite thorough allergic management, and when simple measures such as removal of polypi have failed to give relief. Correction of the underlying condition is the first consideration but we may be faced with impeded drainage due to polyposis within the antrum, which defies allergic methods, or to secondary infection, with empyema, possibly of dental origin. At times an intranasal antrostomy may be beneficial or even may allow one to eradicate polypi from within the sinus. On the other hand the value of the canine fossa approach may be obvious. One is rather inclined to use this method, particularly in the edentulous patient.

Dentigerous and radicular cysts, and benign and malignant tumors involving the antrum are indications for radical surgery but hardly fall within the category of maxillary sinusitis.

SUMMARY

The diagnosis of chronic maxillary sinusitis depends upon a carefully taken history and a thorough examination, with exclusion of other disorders which may present similar symptoms. A better appreciation of the physiology and pathology has resulted in a more rational therapeutic approach to this condition, with a decreased incidence of radical surgery. While correction of the underlying cause, such as allergy, dental infection, or metabolic or systemic disease, is the first consideration, irreversible pathological changes with obstruction and impeded drainage may indicate the advisability of surgical procedure. Intranasal antrostomy is preferable, unless the condition obviously requires the canine fossa approach.

Let us hope that the general acceptance of the necessity for careful study with consideration of all possible etiologic factors and a conservative and rational attitude towards surgical procedures will result both in less dissatisfaction upon the part of patients and in less disillusionment for the physicians who follow these cases afterwards. We might well adopt the following policy: Operate when indicated, and radically if necessary; but only with an intelligent comprehension of the entire problem, and with a clear conscience.

Symposium: The Modern Treatment of Maxillary Sinusitis

SURGICAL TECHNIC: END RESULTS

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IN MANY institutions, the resident of today gains a meager experience in the technic of maxillary sinus surgery. Radical procedures on this sinus are a rarity in many places. In fact, simple puncture through the inferior meatus is now relatively uncommon.

I was brought up in the midst of a great deal of surgical sinus activity. If my memory is correct, on my peak day as a senior on the Nose and Throat Service at the Massachusetts Eye and Ear Infirmary there were five "Caldwell-Lucs" on the schedule. At least one or two of them were bilateral operations. Probably the times have changed there just as they have changed elsewhere.

My assignment in this symposium is limited to surgical technic and some comment on what can be expected in the way of end results.

Prior to the advent of chemotherapy and the antibiotics, rhinologists could be quite far apart in their beliefs regarding the effectiveness of very different types of surgical attack on this sinus. For example, in 1927 before the Section meeting of the American Medical Association, Hempstead[1] reported his experience with the intranasal surgical treatment of chronic maxillary sinusitis. His technic was a modification of the Krause operation. Krause had modified the Mikulicz operation first described in 1886. Hempstead's original technic has been widely copied and somewhat modified. It consisted of making what is usually referred to as an antrum window, plus the removal of the mucosa that can be seen to be grossly diseased.

About the same time, Israel[3] reported his experience with the surgical treatment of chronic maxillary sinusitis and expressed favor for the Denker operation, to be performed in cases in which the infection had been present over three months and had resisted conservative methods of treatment.

For the benefit of the young men in this audience who are becoming acquainted with modern otolaryngology, a remark on the Denker operation might be in order. An illustration from Loeb's Operative Surgery of the Nose, Throat and Ear[4] compares the amount of bone removed from the anterior surface of the maxilla as compared to a Caldwell-Luc operation (fig. 1). Loeb comments:

> The operative procedure is identical with that of the Caldwell-Luc method except that the removal of the facial wall is continued so as to include the infero-external angle of the crista pyriformis.

The advantage of this exposure is obviously one of visualization of the whole interior of the sinus. Thus, we find two rhinologists favoring widely different procedures from the standpoint of their radical nature to accomplish practically the same end result.

Last week I had an opportunity to ask some candidates for Board certification

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some questions regarding their teaching in the matter of chronic maxillary sinusitis. These queries were made to satisfy my curiosity and were not specifically made to test their knowledge. Among 26 candidates, approximately half had never heard of the Denker procedure.

I think we can dispense with any further consideration of this operation and confine our thoughts to the two surgical procedures that are in modern usage for certain cases of chronic suppuration. The question of which operation I would choose to perform will become evident. At this point, I am going to comment on certain aspects of the surgical steps in both the intranasal antrostomy or antrum window, and the Caldwell-Luc procedure.

Inasmuch as there is nothing formidable about the technic of intranasal antrostomy or of the Caldwell-Luc operation, and the basic maneuvers in the performance of these operations are the same as they were ten or twenty years ago, one might question the importance of a discussion of technic at this time. The principal reason for this symposium is to bring up to date the current ideas on the management of maxillary sinusitis in view of the changes that have occurred in the problem of controlling infections in this era of antibiotics. It would seem reasonable, therefore, only to expect something new in the phases of this discussion assigned to Dr. Van Alyea and to Dr. Hill. However, there is always some merit in taking stock from time to time of the technic of procedures which we perform in a more or less routine fashion according to an established pattern.

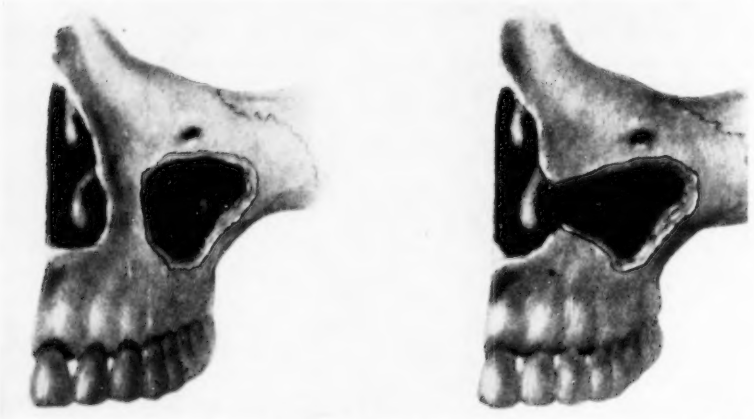

FIG. 1.—Note the amount of bone removed in the Caldwell-Luc operation (left) as compared with the Denker operation. (From Loeb.[4])

The following illustrations are from redrawings of Hempstead's operation for the creation of an adequate antrum window as he originally described it.

1. The first step consisted of the elevation of the inferior turbinate after cutting the anterior attachment so as to expose the inferior meatus (fig. 2a). In my experience there are some instances in which it is unnecessary to cut the anterior attachment. Adequate exposure of the anterior half of the lateral wall of

the inferior meatus may be adequate if the inferior turbinate is fractured upward.

2. The second step was to enter the maxillary sinus with a trocar so as to provide an opening (fig. 2b). This step has been modified by those who desire to make a flap to lay down over the inferior margin of the window. In my opinion this is desirable. The anticipated size of the window is defined by an incision through the nasal mucosa of the lateral wall of the inferior meatus along the superior, anterior and posterior margins, and then this flap is turned down so it lays back on the floor of the nasal fossa. The bony wall is then perforated with a trocar, and enough of this wall with its attached layer of mucosa on the antral side is removed by the use of biting forceps to form the window (fig. 2c and d).

3. The next step in the technic described by Hempstead in 1927 was to smooth the edges with a rasp. I have discarded rasps for use in any sinus surgery. The purpose of the rasp was to smooth the edges. I believe that this can be adequately done with biting forceps. In my opinion there is a chance of unnecessary and often considerable trauma to soft tissue when a rasp is used.

4. The fourth step involves wiping out secretions with a cotton pledget and then inspecting the inside of the antrum. Polyps and grossly diseased membrane are removed by use of an assortment of angled curettes and some cupped forceps.

5. The final step involves packing, if that is to be used. If there is a mucosal flap to lay over the inferior margin of the window, some form of packing is necessary to keep this in position. Vaselin gauze is adequate. In instances where this flap has proven inadequate and I do not have to consider packing against it, or if the tongue of the flap will be kept in the desired position, I prefer a balloon

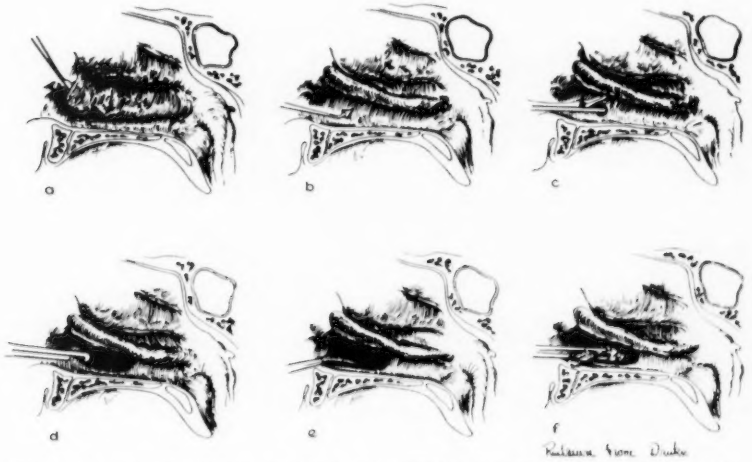

FIG. 2. a, Cutting the anterior attachment and fracturing it upward; b, introduction of the Wilhelminsky trocar; c, enlarging the window posteriorly; d, enlarging the window anteriorly with the Kerrison punch; e, smoothing off the window with the rasp; f, wiping out the antrum with cotton for inspection. (Redrawn from Hempstead.[1])

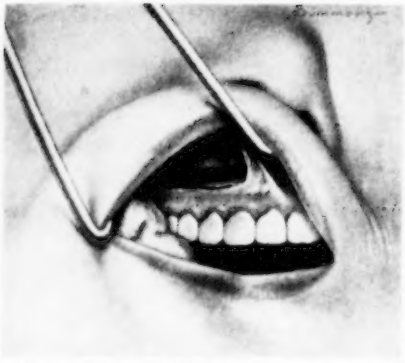

FIG. 3.—The opening through the anterior wall of the Caldwell-Luc operation and the view with the nasal wall removed. (From Loeb.[4])

made from a finger cot, or similar tissue, that can be inflated for even pressure with the minimum trauma one gets from its presence in the sinus or on its removal two or three days later.

The aftercare is simple and involves the use of dry suction as it seems indicated.

Now let us consider some aspects of the Caldwell-Luc approach. We are probably all in agreement on the point that it does give us better visualization of the interior of the sinus, and that there are certain situations in which this operation is definitely indicated over an intranasal procedure. Such situations are present when there is a possibility of malignancy, the presence of a foreign body in the sinus as a dental root, or when septa are present partitioning the sinus.

Another illustration (fig. 3) from Loeb's Operative Surgery[4] depicts the surgical hole made in the anterior wall of the sinus. It shows the inferior turbinate seen through the nasoantral window. This picture brings to my mind some individuals with such fine looking teeth on whom I have performed a Caldwell-Luc, and though they were satisfied with the relief of their suppuration, they were unhappy over the prolonged sensory disturbance in certain teeth. In my opinion this constitutes the only reason for avoiding the Caldwell-Luc approach over intranasal antrostomy.

In individuals who are edentulous in the upper jaw of the side being operated, I favor the Caldwell-Luc approach. Except for this sensory disturbance produced in the facial wall, I believe that I can carry out the remainder of the operation—removal of the grossly diseased membrane and the making of the nasoantral window — with less trauma and more efficiency than with the operation of intranasal antrostomy.

While in residency training, I was taught to make the nasoantral window in the Caldwell-Luc procedure with practically no nasal instrumentation. This can be done as follows: After the diseased membrane has been removed, a small gouge is used to define the limits of the thin bony plate to be removed from the lateral wall of the inferior meatus (fig. 4a). The gouge is tapped lightly along the outline for the bone to be removed so that it cuts through the light plate of bone, which is then removed exposing the nasal mucosa covering that side. A thin-bladed knife, such as a cataract knife, then cuts through the mucosa along the superior margin of this flap and its anterior and posterior margins. This flap is then turned inward to cover the inferior margin of the window (fig. 4b and c). The small irregularities left by the gouge cuts can be further smoothed off in the bone with a small back-biting forceps. If there is a mucosal edge protruding beyond the cut edge of bone, it has been my observation that the covering of this bone with epithelium progresses more rapidly and effectively than it would do otherwise. The flap of mucosa is not going to adhere to the underlying bone over which it is turned down if there is

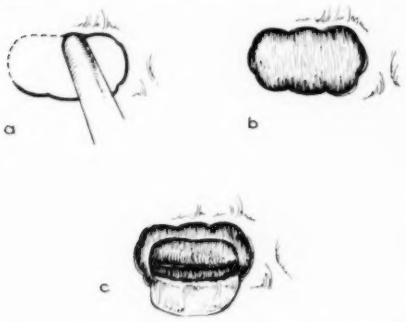

FIG. 4.—a, A small gouge is tapped lightly along the outline for the bone to be removed so that it cuts through this light plate of bone; b, this plate that has been defined is then removed exposing the nasal mucosa covering that side. A thin-bladed knife, such as a cataract knife, is then used to cut through the mucosa along the superior margin of this flap and the anterior and posterior margins; c, this flap is then turned inward to cover the inferior margin of this window. The small irregularities left by the gouge cuts can be further smoothed off in the bone with a small back-biting forceps. In this illustration, in order to emphasize a point, the mucosal margin that defines the window and the flap have been purposely left longer than is actually the case. If there is a mucosal edge protruding beyond the cut edge of bone, it has been my observation that the covering of this bone with epithelium progresses more rapidly and effectively than it would do otherwise.

a layer of respiratory mucosa underneath it. In many instances this part of the sinus mucosa will not have been removed. However, a fairly long flap is easy to keep in the desired position by packing, but all that is really needed is an edge to adhere over the bony edge of the lower margin of the window.

There was a day when one heard arguments about the necessity of complete removal of the lining of the maxillary sinus. The good clinical results reported by the proponents of intranasal surgery for chronic maxillary sinusitis would support the idea that a complete removal is unnecessary because of the very fact that that would be impossible through an antrum window. My own observations of end results in removing only grossly diseased membrane such as polyps, cysts and areas of marked edema or necrosis, when the operation on the sinus has been done through the Caldwell-Luc approach, convinces me that complete removal is unnecessary. We know that respiratory mucosa has tremendous power for growth, and it has always seemed to me that the reparative powers of this tissue, plus the lessened period of time for healing if some healthy tissue remains, argue that grossly healthy lining should be left undisturbed. Those who argue that microscopic examination of grossly healthy lining will show evidence of inflammation and that this is important as a potential focus for systemic disease will not agree. Personally, I believe that natural reparative powers favor healing in this type of tissue, and the possibilities of this are even greater today with modern supportive antibiotic therapy.

When there is a dental fistula to deal with, I have found that a majority of these will close when the infection above is eliminated. I usually curette the lumen of the fistula gently to remove granulation tissue and ingrown epithelium at the time of the operation. A large fistula may need a flap of palatal mucosa lined with periosteum swung over to cover the opening.

I have said nothing about anesthesia for these procedures. We probably all agree that local anesthesia is desirable and that it must be adequate. I prefer cocaine and novocain and perform a second division block in addition to the local application of cocaine and adrenalin within the inferior meatus and to the area of the sphenopalatine foramen. Also, I like to inject novocain into the anterior end of the inferior turbinate when doing an antrum window, and, of course, I use it in the soft tissue of the canine fossa when the Caldwell-Luc is being performed.

The window can be large without too much aggression anteriorly or posteriorly or on its other borders. Hilding has

shown that it will stay open if we can get epithelium to grow over the bony margins, regardless of where the window is made.

Complications of either surgical procedure are uncommon. I have not had any in my personal series but once cared for a colleague's patient in his absence in which case troublesome bleeding from the posterior margin of the window apparently occurred from a branch of the sphenopalatine artery. It was controlled by packing. However, there are reports in the literature of the necessity for external carotid ligation after too large an antrum window had been made.

END RESULTS

When I started to take stock of my personal experience with the surgical treatment of chronic suppuration confined to a maxillary sinus, I found that during the past decade an average of 3 cases a year or 30 for this ten-year period had been subjected to surgery. Ten of these had antrum windows and 20 the Caldwell-Luc approach.

This series is so small compared to other series reported that it did not seem worth while to go to the difficulty of getting the patients back for a follow-up at this time. (Hempstead[2] in 1939 gathered 1,634 cases from the literature. "A good result was obtained in 97 per cent of these cases by the intranasal antral window.") All of my cases were followed until each was clinically well. From my personal experience, I have, therefore, concluded that in this day when chronic maxillary sinusitis exists as an isolated infection, cure is practically certain by creating an adequate permanent antrum window plus the removal of all grossly diseased membrane that can be visualized through this window. If the patient is edentulous, I feel that an opening through the anterior wall of the maxillary sinus, removal of the grossly diseased membrane and creation of a permanent antrum window may be accomplished with a reaction no greater than by intranasal antrostomy alone.

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FIRE AND EXPLOSION HAZARDS WITH FLAMMABLE ANESTHETIC AGENTS, AND THEIR CONTROL

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BY INVITATION

FIRES and explosions have occurred in operating and delivery rooms ever since flammable anesthetic agents were first used. It is true that such accidents occur only once in 80,000 to 100,000 administrations of anesthesia. However, since there are about eight million administrations of anesthesia annually in the United States, it is important that definite precautions be taken to avoid, or at least further minimize, these catastrophes.

The danger of fire and explosion is also a factor in industry where flammable agents are used in the manufacture of many products. However, industry has taken definite steps to minimize this hazard by improvements in the physical plant and by intensive instructions to personnel on safety measures. This practice has not been the general rule in most hospitals where flammable anesthetic agents are used. Nevertheless, hospitals cannot justly be accused of gross negligence along these lines, because for many years the recommendations made for the prevention of fires and explosions were so variable and controversial that it was difficult for them to fulfill the requirements.

Today, we are close to the solution of many of these problems, thanks to the extensive research conducted by the Explosives and Physical Sciences Division of the United States Bureau of Mines, the Mellon Institute of Research, the United States Bureau of Standards, the National Fire Protection Association, and the Anesthesiology Section, University of Pittsburgh School of Medicine.

From the Department of Anesthesiology at the University of Pittsburgh School of Medicine, St. Francis and Medical Center Hospitals, Pittsburgh, Pa. Presented at the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

FACTORS CONDUCIVE TO EXPLOSIONS

The four essential factors required for the development of an explosion are:

1. *Combustible gases or vapors.* In ordinary anesthesia practice the gases or vapors used are ethylene, cyclopropane, diethyl ether, and divinyl ether, or a combination of these.

2. *Oxygen supply.* Oxygen is essential to all ordinary combustion. In anesthesia, oxygen is supplied pure, in air, or in chemical combination with nitrogen in nitrous oxide.

3. *Explosive mixture ratio of 1 and 2 above.* Explosive mixtures are those in which the ratio of flammable gases and oxygen is within certain limits. These limits are shown in table 1. In this consideration we must not exclude the nitrous oxide-oxygen-ether sequence, because this mixture is also flammable.

4. *Ignition source.* Flammable mixtures require an ignition source for an explosion to occur. Ignition sources may be electric sparks, small flames, incandescent surfaces and local combustion initiated by catalysts.

Factors 1, 2 and 3 are essential to practical anesthesia. However, the fourth factor mentioned is not essential and should be controlled or eliminated.

Open flames definitely should be prohibited in operating rooms and in other rooms where anesthetics are administered or may be present.

The use of incandescent or high-frequency cauteries or coagulators within a distance of two feet from the mouth of a patient receiving flammable anesthetics should be prohibited unless a rubber sheet and wet drapes are properly applied.

On rare occasions, explosions of ether (from peroxides) have occurred owing to the effect of sunlight. Ether should always be stored in original cans. Unless amber glass jars are supplied by the manufacturers, any ether remaining in the anesthesia machine should be removed and properly stored at the end of the day's work.

Electrical equipment should be inspected frequently to detect faulty operation, broken switches and plugs, frayed cords, and open sparks. Unless the equipment is explosion-proof, it should not be used where concentration of flammable anesthetic gases may be present.

Roentgen-ray and fluoroscopic equipment have been known to cause fire or explosion when flammable anesthetic agents were being used. Roentgen-ray apparatus is often brought into the operating room during the administration of an anesthetic agent. Shock-proof equipment decreases the hazard of fire and explosion but does not eliminate it entirely.

STATIC ELECTRICITY

A high percentage of explosions in hospitals can be attributed to sparks from static electricity. Static electricity, or electricity at rest, often results from friction between dissimilar, nonconductive materials. Some familiar examples are the charges acquired by shuffling of feet across a rug on a dry day, running a comb through the hair, rubbing a glass rod with silk or woolen cloth or separating blankets or unfolding them. Conspicuous charges can be produced merely by handling nylon, rayon and many other nonconductive materials and often appear on articles that are near electrified objects.

Some materials permit electricity to pass through them readily; other materials are poor conductors of electricity, and a few are almost perfect nonconductors or insulators. Metals and carbon

TABLE I

LIMITS OF FLAMMABILITY OF ANESTHETICS[1]

ANESTHETIC AGENTS	DENSITY OF AIR TAKEN AS 1	LIMITS OF FLAMMABILITY					
		IN AIR		IN OXYGEN		IN NITROUS OXIDE	
		LOWER	UPPER	LOWER	UPPER	LOWER	UPPER
Ethylene	0.97	3.05	28.6	2.90	79.9	1.90	40.2
Propylene	1.45	2.00*	11.1	2.10	52.8	1.45	28.8
Cyclopropane	1.45	2.40	10.3	2.48	60.0	1.60	30.3
Ethyl chloride	2.23	4.00	14.8	4.05	67.2	2.10	32.8
Ether-divinyl	2.42	1.70*	27.0*	1.85	85.5	1.40	24.8
Ether-diethyl	2.56	1.85*	36.5*	2.10	82.0	1.50	24.2
Nitrous oxide	1.52	Not flammable		Not flammable		Not flammable	
Chloroform	4.12	Not flammable		Not flammable		Not flammable	

* Tests made in 8 liter, cylindrical, closed steel bomb.

[1] Jones, G. W., Kennedy, R. E., and Thomas, G. J., Technical Paper 653, United States Bureau of Mines, 1943.

are good conductors; acids, salt solutions, plants, and animals are partial conductors; various oils, dry wood, silk, rubber, plastics, glass and dry air are considered insulators.

It is almost impossible to prevent the development of electrostatic charges in operating rooms where there is so much activity and opportunity for frictional contact with nonconductive materials present in the room.

The only way to prevent the accumulation of static electricity, where easily electrified materials abound, is to provide paths by which the charges flow away as fast as they are generated. All movable objects present in a room where flammable anesthetic agents are administered should have, therefore, proper electrical contact with the floor.

GROUNDING

Grounding chains are useful for removing static electricity from operating room equipment only under the following conditions:

1. The floors must be definitely conductive or have metal dividing strips closely spaced.

2. The chains should make long line contact with the floor if the floor is conductive, or with at least two metal strips if it is not. Chains that are so short as to provide only one or a few links in contact with the floor cannot be relied upon to remove static. Long chains on tables, stools, carriages, gas machines, will not be in the way if they are placed diagonally underneath the equipment.

3. Chains should be cleaned occasionally to remove dirt, wax, grease, soap, oxide films, or other foreign substances that may accumulate between the links and cause high resistance. This should be done with a stiff brush and a greaseless detergent.

4. Chains having open links are to be preferred to those of the ball or beaded type, which have conductive parts that are inaccessible for cleaning. They should be of material that will not rust or give off abrasive sparks when dragged over concrete or other hard surfaces.

In the event the floor has high resistance, a satisfactory solution to the problem has been found in the use of one moistened and two wet towels (or any other sizeable pieces of fabric). The first towel (fig. 1) is moistened and folded lengthwise; one end is placed under the patient's shoulder and the other end is tucked between the mattress and the top of the operating table. A second towel is wet and laid from the base of the table (above the caster) to the floor toward the anesthetist's foot. A third towel is also wet and is stretched from the foot of the gas machine to the floor. The anesthetist's foot and the stool touch one or both of the towels. Moistened and wet towels employed in such a manner will provide excellent conductors and grounding even though a standard test may indicate high floor resistance. The explanation for this recommendation is that conduction of electricity to ground through a floor is accomplished through many paths of high resistance. When a contact to the floor is made with a chair, plate, or a chain, only a few of the available paths to ground are used. When contact is made through a wet towel, cloth, or pool of water placed on the floor, thousands of such paths are made available and the neutralization of charges is easily accomplished.

CONDUCTIVE FLOORS

The floor is usually the most convenient common path for electrical charges to follow. Floors made of rubber, linoleum, porcelain tile, or marble are poor electrical conductors. Neutralization of charges through such floors requires considerable time. A dangerous spark may occur before the neutralization is complete.

A terrazzo floor with conductive metal grills may or may not be sufficiently conductive. There are several types of satisfactory conductive floors on the market, and new ones are appearing from time to time. In planning the installation of conductive floors, consideration must be given not only to conductivity but to cost, durability, and appearance.

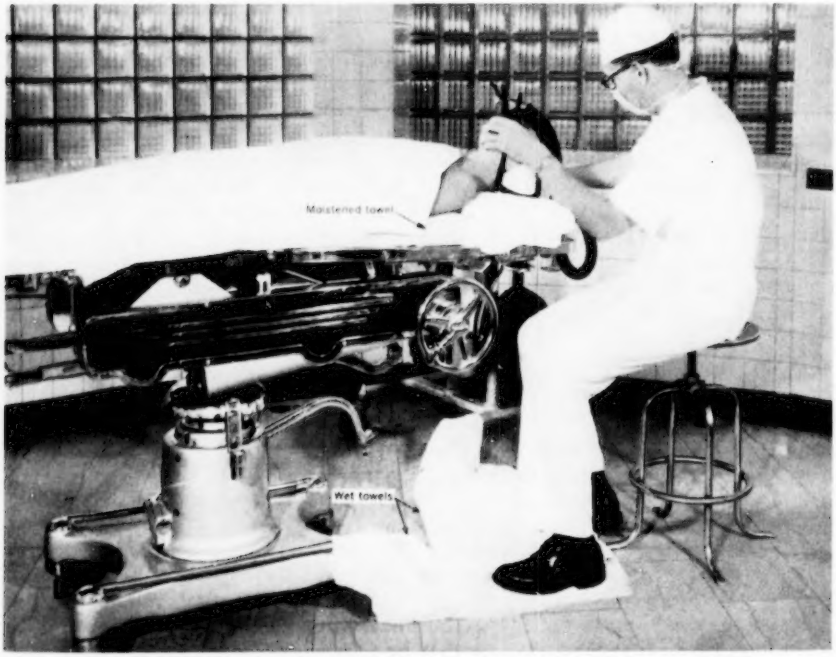

FIG. 1—Method of using wet towels for removal of static electricity in the operating room.

HUMIDITY

It is believed by many anesthetists that an atmosphere of high humidity will prevent the accumulation of static electricity and thereby eliminate explosions caused by electrostatic charges. However, several explosions have been reported with the relative humidity as high as 65 per cent; another explosion was initiated by a static spark when the relative humidity was 76 per cent. Unless the relative humidity is high and constantly maintained, it cannot be relied upon to prevent the possible electrification of rubber parts, woolen blankets, and synthetic fabrics.

ELECTRICAL EQUIPMENT

Receptacles and plugs which cannot be pulled apart accidentally should be installed where needed. They should not be placed in or near the floor where heavy anesthetic gases are apt to pass over them, and they should be well out of the range of combustible gas mixtures. This also applies to heaters, open motors, and switches.

In new building construction the electric wiring should conform with the lat-

est approved regulations of the National Fire Protection Association.

ANESTHESIA EQUIPMENT

Each gas machine should be equipped with conductive rubber breathing tubes, mask, and bag. All connectors or adaptors for such items should be of metal or other conductive material.

Heavy window-sash grounding chains should be installed on all anesthesia equipment, providing the floors are definitely conductive or have closely spaced metal dividing strips.

Moving anesthesia machines is always dangerous, and extreme caution should be exercised when they are moved across nonconductive floors. Altering or changing connections during the course of anesthesia is hazardous and should be avoided. Such activities may give rise to static charges which, while at times can scarcely be seen or felt, can prove disastrous. It is much safer to move the patient with the gas machine completely disconnected, and after the grounding has been accomplished, to reconnect the gas machine and carry on from there.

OPERATING ROOM EQUIPMENT

Mattresses, pads and pillows should be covered with conductive rubberized fabric. All stretcher carriers should be equipped with conductive rubber, especially where nonconductive floors are still in use.

Operating tables, anesthesia stands, stools, and instrument tables should be equipped with a conductive material at the points where contact is made with the floor. Stools should be bare or covered with conductive materials.

Endoscopic instruments which operate on 6 or 8 volts do not constitute a known hazard.

Wool blankets, plastic sheets, and most synthetic fabric materials should not be used in the operating room. Cotton blankets are satisfactory, but if they are kept in a warming compartment, some means should be provided to keep them from losing moisture.

PERSONNEL

Cotton uniforms are desirable from an electrical standpoint because they retain a satisfactory conductivity at fairly low humidities and because they do not produce or acquire charge by frictional contact with other much used cotton articles such as sheets, bandages and sterilized bundles.

Conductive shoes should be worn by all operating room personnel. Persons wearing ordinary rubber or synthetic soled shoes may be static carriers regardless of the type of floors in use. Soles of leather or other absorbent material can be brought to the desirable value of 1 megohm or less in a few minutes by standing on a large wet pad or piece of wet carpet.

IMPORTANT THINGS TO REMEMBER

1. Keep visitors away from the anesthetist and his equipment when using a flammable anesthetic agent.

2. Paper wrappings should be removed before placing gas cylinders in service so that the cylinder label may be clearly visible.

3. Never lubricate regulators, fittings, or gauges with oil or any other combustible substance, and do not permit oil, grease or flammable liquids to come in contact with oxygen cylinders, valves, regulators, gauges, or fittings.

4. Always clear the particles of dust and dirt from the outlet of each cylinder by slightly opening and closing the valve before applying any fitting to the cylinder.

5. Do not permit oxygen to enter the regulator suddenly. Open the valve slowly. When opening the valve, point the face of the regulator gauge away from the operator and other personnel.

FIG. 2—Method of drawing a sample of exhaled gas and air.

FIG. 3—Sample being carried to a safe place for open flame test.

FIG. 4—Plunger removed and mouth of syringe barrel applied to alcohol lamp flame.

6. Do not use oxygen fittings, valves, regulators, or gauges for any service except oxygen; and do not attempt to use regulators that are in need of repair, or cylinders having valves that do not operate properly.

7. Gases should never be mixed in or added to an oxygen cylinder or any other cylinder by hospital personnel.

8. Do not attempt to repair defective oxygen equipment unless you are properly trained and qualified for such work.

9. Cylinder valves should be closed at all times except when gas is actually being used; they should be fully opened when in use.

10. Nonflammable anesthetics should be employed when electrocoagulating or fulgurating apparatus is used in connection with eye, ear, nose or throat surgery. However, in the event that a patient, already anesthetized with a flammable mixture, requires electrocauterization in the vicinity of the neck or face, the following procedures are recommended:

a. Discontinue administration of the flammable agent and move the anesthesia equipment to a place at least 5 feet away from the patient.

b. Allow the patient to breathe room air for *not less than three minutes.*

c. A 10 cc. syringe is inserted halfway into the oral cavity and a sample of the exhaled gas is taken from the patient (fig. 2).

d. Without moving the plunger, the syringe containing the sample of exhaled gas is carried to a nearby room where it is safe to light an alcohol lamp (fig. 3).

e. After the lamp has been lighted by an assistant, the plunger of the syringe is removed and the mouth of the barrel is brought into contact with the flame (fig. 4). If any flammable gas is present in the barrel, it will be ignited and a puff of flame will be seen. Electrocauterization should not be attempted until a sample of the exhaled gas gives a negative test.

This simple procedure has been employed at St. Francis Hospital for the past 15 years and we have found it to be convenient and reliable.

CONCLUSION

Manufacturers, architects, and builders concerned with hospital construction should be thoroughly familiar with the hazards common to anesthetizing areas and should supply materials and construction that will conform with modern safety-code requirements.

Hospital management should be grateful for the intense interest being shown at present in safety, and should regard it as a duty of the surgeon, anesthesiologists, nurses, and other operating and delivery room personnel to be thoroughly instructed in all of the causes of anesthetic fires and explosions. This duty should be impressed on each member constantly, and a method should be devised to insure complete adherence to all recommended precautions.

SUBMAXILLARY DUCT CALCULUS CLAMP

JAMES S. WALKER, M.D.
URBANA, ILL.

THE NEW clamp is a modified chalazion forceps (figs. 1 and 2). This instrument provides (1) fixation without trauma and (2) a dry operative field. Removal of calculi from the anterior portion of the submaxillary duct is thus simplified.

Technic. Under local anesthesia the solid plate is placed under the site of the calculus and the ring blade is squeezed shut. The stone is checked by palpation and the clamp fixed in place. The stone is securely trapped and a bloodless methodical dissection may be done. After removal, the smooth lining membrane of the duct is easily visualized and explored. A binocular loupe is sometimes of value in this procedure to help locate small nonpalpable calculi.

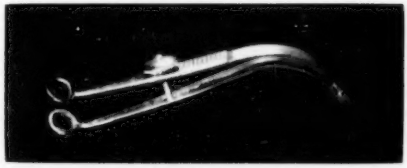

FIGURE 1.

FIGURE 2.

From the Department of Otolaryngology, Carle Hospital Clinic, Urbana, Ill.

Presented as a *New Instrument* at the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

SWIM-EARS

E. A. KINDEL, M.D.
BY INVITATION
and
ROBERT E. HOWARD, M.D.
CINCINNATI, OHIO

UNTIL the present, there has been no effective, reliable or comfortable way of protecting the ears against the hazards of water.

Swim-Ears are contoured inflated rubber and plastic earpieces which are worn over the ears, affording positive protection and maximum comfort to the wearer (fig. 1).

The inflated rubber piece is shaped like the ear and contoured so as to fit the contours of the skull around the ear. Since the contours of the skull around the ear are constant we can reliably and securely fit any individual by employing one of the three different sizes of Swim-Ears. Any variation in the contours such as that produced by mastoidectomy is easily accommodated for, since the earpiece is inflatable and as such is capable of adapting to any irregularities, producing a comfortable, soft, and watertight seal.

A sleeve on the outer surface of the rubber piece is fitted with a clear plastic shield, thus providing an absolute earcover. The plastic shield is very thin, yet rigid, and because of its clarity the ear is plainly visible at all times. The edge of the plastic piece is also contoured for perfect fit.

A spring metal band approximately 1/8 inch in diameter attaches to each earpiece and fits around the back of the head, and adjustment of the Swim-Ears backward or forward on the headband is provided for. Also the attachment of the headband and earpieces is set in rubber, so as to make the unit completely flexible and adjustable.

FIGURE 1.

One other feature is a simple valve mechanism which is incorporated into the Swim-Ears at the point of attachment of the headband. This is provided so as to equalize pressures in the ear when either applying or removing the Swim-Ears so that one is never conscious of pressure or suction on the drum.

While wearing the Swim-Ears one's hearing is only slightly less than normal.

At this time there is under development another totally different application of the earpieces. The same inflated contoured rubber piece will have an acoustic plate provided for it, which will protect the ears against noise of 4,000 cycles or more. Preliminary tests in the test cells of the General Electric Jet Engine Plant at Lockland, Ohio have provided gratifying results, and we expect to report more fully on this feature at a somewhat later date.

Presented as a *New Instrument* at the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

TRANSACTIONS
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Editorials

GRADUATE EDUCATION

POSTGRADUATE medical education (or graduate education, as it is known in the United States) is concerned with the education of all doctors after they have qualified to practice medicine. The United States leads all other countries in facilities available for graduate education and approximately 40 per cent of the physicians (including both general practitioners and specialists) are enrolled each year in postgraduate continuation or refresher courses.

Standards and qualifications for specialists exist in some countries but not all. In some countries some specialists recognized in the United States are not recognized at all. Ophthalmology, for instance, is not a recognized specialty in Austria, Guatemala, Denmark and India; Otolaryngology is not recognized as a specialty in Austria, Guatemala and India. Plastic surgery was recognized as a specialty in 16 of 32 countries reporting to the World Medical Association in 1950.

Organized graduate education in the United States has high standards that are established by specialty boards recognized by the Advisory Committee on Specialty Boards and the Council on Medical Education and Hospitals of the American Medical Association. Through the boards there has been established a standard of requirements for certification as specialists that is tacitly adhered to by the graduate departments of medical schools that offer a degree, M.S., Ph.D., for three to five years of study and the presentation of an acceptable thesis. The role of the medical specialty boards in American graduate education began with the formation of the American Board of Ophthalmology in 1915, sponsored by the national ophthalmological bodies. The requirements for certification were tentative and arbitrary. They have been altered in keeping with the times and experience, always with the clinical practitioner and his service to his patients uppermost in mind.

The Academy has conducted the most intensive extramural instructional program of any medical society with a mixed membership of private practitioners, teachers and investigators. The program of instruction established in 1921 in the fields of ophthalmology and otolaryngology has expanded in scope, in attendance and in faculty and still leads the field. Home Study Courses were

added in 1940, making a year-round educational service to interns, residents and practicing doctors. The Home Study Courses were established on information given by the boards of ophthalmology and otolaryngology in their instruction to candidates for certification. Many Board members have remained on the Home Study faculty, and both boards now recommend the Home Study Courses to candidates. Consequently, the Academy instruction program is now the accepted standard for these specialties in all American medical graduate schools. The Academy faculty includes teachers from all medical schools and teachers in some of the ancillary fields with such universal agreement on requirements and standards of educational achievement that improvement in methods of practice has steadily advanced. New forms of treatment with multiple agents have developed faster than any one man can keep up on. The race for better service has begun, every one is in it, and its tempo is accelerated.

The Academy has had a lot to do with initiating this trend in graduate education. The annual meeting of the Academy brings together for a few days the thousands of students and teachers for contacts necessary for orientation and readjustment of individual sights for direction and standards for self-appraisement. The current choice of subjects, instructors and demonstrators is wider than ever. Greater facilities for class work are available and every useful aid in audiovisual mechanism is engaged wherever and whenever it is applicable.

The schedule of courses for the coming meeting is for the convenience of members and guests. It is published nearly six months before the meeting to give opportunity to study it carefully for selection of subjects on a planned basis. Most subjects are repeated yearly because the advances in the knowledge of the field require it. No one can take in all that is available in several subjects. The wise will adopt a long-term plan, clinical and basic, properly balanced, and subscribe for only what he can assimilate.

NEW INSTRUMENTS

IT HAS long been a custom of the Academy and of some other scientific and clinical bodies to devote a few minutes of the scientific programs to the presentation of new instruments, diagnostic equipment, new remedies and methods of treatment. Usually the presentations are made by individuals, members of the society, who devised the item to be shown or had sufficient experience with it in a practical way to clearly demonstrate its usefulness. The presentation includes a brief description of the item, a statement of its use, a picture or slide for projection on the screen, and in many instances a model of an instrument is passed through the audience. The secretary of the session is advised of only a few presentations long enough before the meeting to allot the proper time. Consequently, the time of the scientific session is often thrown off schedule by a number of last minute requests for time to present an instrument.

The scientific programs at the Academy meetings are scheduled with great care and attention to timing. Papers and motion pictures are timed and placed where the best reception can be assured and the audience best repaid for their attention. Reasonable elasticity in the running off of the program is provided, but when a large number of unexpected instrument presentations appear, the program is delayed.

In fairness to all concerned, the presentation of new instruments and similar items should be prearranged with the secretary of the session just as papers and motion pictures are scheduled. The instruments can be mentioned in the program with a brief description and pos-

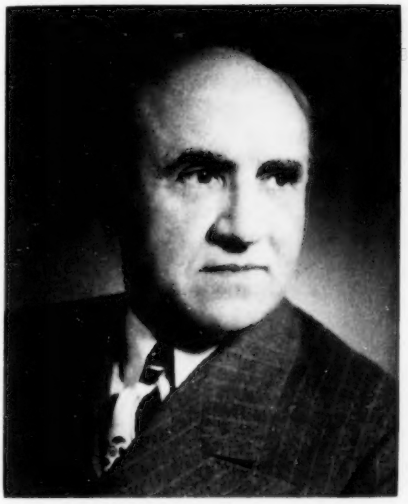
sibly a cut. The reception will be infinitely better and the necessity of disturbing the audience with the passing around of the model will be eliminated. Following the presentation the instrument will be placed on display in a specially constructed case in the foyer to the scientific exhibit. New instruments will be presented at the scientific session that are accepted by the secretaries before August 15 for inclusion in the printed program.

SPECIAL PROGRAMS

THE SPECIALTY groups that are affiliated in one way or another with the Academy or hold meetings during the week of the Academy convention have scientific programs that are of special interest to some members of the Academy who are not members of the smaller groups. The Otosclerosis Study Club, the Allergy group, the Orthoptic group, the Society of Military Surgeons, the Plastic Surgery groups and others have open meetings that are announced in the Academy Program by special arrangement, although the Academy is not directly responsible for the programs. There are good reasons for these special programs put on by special groups. They appeal to a limited number of Fellows and they provide an outlet for presentation of new ideas. Executive sessions and dinners may be closed or on invitation but the scientific programs are open to all Academy Fellows and registered guests.

PRESIDENT-ELECT

Following the regrettable and untimely death of President-Elect John J. Shea, your President, in compliance with Article III, Section 4 of the By-Laws of the Academy, ordered the Board of Councillors to nominate a successor.



WALTER H. THEOBALD, M.D.

The Board of Councillors unanimously nominated Dr. Walter H. Theobald of Chicago to fill the vacancy in the office of President-Elect brought about by the death of Dr. John J. Shea. This nomination was followed by unanimous election by the Council of the Academy.

It is therefore my privilege formally to announce to the membership of the American Academy of Ophthalmology and Otolaryngology the election of Dr. Walter H. Theobald of Chicago to the office of President-Elect.

The Executive Secretary-Treasurer has been requested to publish this statement in the official Transactions of the Academy.

(Signed)
FREDERICK C. CORDES, M.D.
President,
American Academy of
Ophthalmology and
Otolaryngology

February 13, 1953

NON-SURGICAL TREATMENT OF CATARACT

After careful review of the "Non-Surgical Treatment of Cataract," *Science*, September 12, 1952, the Committee on Ophthalmology of the National Research Council has adopted the following recommendation:

Because of the total lack of evidence that the lens antigen treatment of cataract, described by Mr. R. F. Shropshire (*Science*, September 12, 1952), has any efficacy; because adequate evidence is now available to the Committee that it is, in fact, without demonstrable efficacy and because treatments of this type have been thoroughly investigated in the past and proved not only invalid but potentially dangerous to the patient, this Committee does not recommend further investigation of this treatment by any agency.

INTERNATIONAL ASSOCIATION OF EYE, EAR, NOSE AND THROAT SOCIETY SECRETARIES — 1952 ANNUAL MEETING

The program for the annual meeting of the American Association of Eye, Ear, Nose and Throat Society Secretaries, held during the annual meeting of the American Academy of Ophthalmology and Otolaryngology at the Palmer House on October 14, 1952, consisted of a panel discussion entitled, "The Selection of Good Speakers and Interesting Programs." Dr. Paul Craig, Secretary for Instruction, Pennsylvania Academy of Ophthalmology and Otolaryngology, stated that whenever he listens to or hears of a fine speaker who has an interesting subject, he either introduces himself or writes to the speaker asking him to present the subject at his local society meeting. Dr. Craig always sends a copy of previous programs given by his local society to the prospective guest speaker indicating to him the high quality of the society and thereby insuring the prospective guest speaker's acceptance of the invitation.

Dr. Craig is a strong proponent of the Study Club type of presentation in which two instructors or speakers are brought into an informal discussion of a specific subject aided by an alert moderator who also brings the audience into the discussion by means of questions and answers. The entire presentation is unprepared and unrehearsed. Dr. Craig has found this type of presentation to be very successful at local eye, ear, nose and throat society meetings.

Dr. Craig stated also that a secretary should make the most of his opportunities to meet people who will prove helpful in the organization of good meetings.

Dr. Sam Sanders, Secretary of the Section on Otolaryngology of the American Medical Association, stated that a local society can spend at least one and sometimes more than one meeting on the presentation of reports of the courses or talks given by the American Academy of Ophthalmology and Otolaryngology at its annual meeting. Specific reporters could be designated to report on certain subjects of interest to the local eye, ear, nose and throat society.

Dr. Sanders believes all members of the local society should take part in the meetings. He believes that the officers should appoint some one to the responsibility of entertaining the guest speaker and seeing that the meeting runs smoothly without interference of any kind. Dr. Sanders thinks the secretary should speak to the members of a local society individually from time to time thus discovering what most of the members like to hear on a program, and then get that type of speaker and subject. Dr. Sanders has found that this improves attendance at meetings.

Dr. Kenneth Craft, founder of the American Association of Eye, Ear, Nose and Throat Society Secretaries, stated that he has found that out-of-town guest speakers appear to draw a greater attendance to meetings than do local talent. He believes that if the program is carefully prepared and scheduled a year in advance, better speakers will be obtainable and better attendance noted. The subjects should be varied to be interesting. Dr. Craft stated that the local societies throughout the United States have an excellent pool of good speakers and interesting subjects in the large group of men who present talks each year at the American Academy of Ophthalmology and Otolaryngology meeting.

Dr. Craft stated that the secretaries of local eye, ear, nose and throat societies should interchange programs with one another and at the same time inform one another of certain speakers and subjects which proved particularly satisfactory to their local society, thereby permitting other societies to use them.

Dr. Craft suggested that certain meetings be set aside as "Local Talent Night," "Case Report Night," "Pathology Night" and "Residents' Night." He also suggested the use of joint meetings with nearby local eye, ear, nose and throat societies.

Dr. Thomas Allen, Secretary of the Pan-American Association of Ophthalmology, stated that he likes to develop good teaching ability in young men by encouraging them to develop a theme or subject in which they are particularly interested and then permitting them to present the subject at a meeting.

Dr. D. S. DeStio, Secretary of the Society, was moderator of the panel.

D. S. DeStio, M.D.
Secretary-Treasurer

In Memoriam

Norman Wyvell Burritt.....Summit, New Jersey
November 27, 1952

Clyde Percy Dyer.....St. Louis, Missouri
February 19, 1953

Ambrose Eastin Eubank.....Independence, Missouri
February 23, 1953

Noah Fox.....Chicago, Illinois
April 9, 1953

Henry Lytle Gowens, Jr.....Philadelphia, Pennsylvania
January 2, 1953

Frederick Andrews Kiehle.....Palo Alto, California
February 23, 1953

Edward Anderson Looper.....Baltimore, Maryland
January 14, 1953

Charles Abram Pfafflin.....Indianapolis, Indiana
December 30, 1952

Joshua Warren White.....Norfolk, Virginia
March 4, 1953

Karl Christian Wold.....St. Paul, Minnesota
December 24, 1952

HOME STUDY COURSES

Secretary:
Lawrence R. Boies

Associate Secretary:
Hendrie W. Grant

Ophthalmology

MONTH	SUBJECT	FACULTY
September	Embryology, Anatomy and Neuro-anatomy	Raymond E. Meek John W. Henderson
October	Physiology	Hendrie W. Grant George P. Guibor
November	Optics and Principles of Biomicroscopy	Arthur Linksz Edwin F. Tait
December	Refraction	Frank W. Newell Manuel L. Stillerman
January	External Diseases, Bacteriology and Virology	James H. Allen S. Rodman Irvine Samuel N. Key, Jr.
February	Perimetry and Neuro-ophthalmology	P. J. Leinfelder Cecil W. Lepard
March	Extraocular Muscles	Paul T. McAlpine Hunter H. Romaine
April	Ophthalmoscopy and Medical Ophthalmology	John P. Macnie Wm. Banks Anderson Samuel D. Aiken
May	Pathology	Michael J. Hogan John S. McGavic
June	Pharmacology and Therapeutics	Kenneth C. Swan Alfred J. Kreft

Otolaryngology

September	Anatomy I	(Maurice F. Snitman
October	Anatomy II	(J. Brown Farrior
November	Histology	Leland G. Hunnicutt Frederic J. Pollock
December	Pathology	Herman Semenov Werner Mueller
January	Physiology	Anderson C. Hilding William C. Thornell
February	Bacteriology	Ben H. Senturia Henry L. Williams
March	Pharmacology	Robert E. Priest Clifford F. Lake
April	Hearing Function and Testing	George E. Shambaugh, Jr. Arthur L. Juers
May	Vestibular Function and Testing	William J. McNally John R. Lindsay
June	Otological Acoustics	Scott N. Reger Clair M. Kos

Application forms for 1953-1954 may be secured from the Executive Secretary-Treasurer of the Academy, Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minnesota. Registrations must be completed before August 15. The fee is $20.00.

GUIDE FOR THE GENERAL PRACTITIONER ON THE REHABILITATION OF THE DEAF

GEORGE E. SHAMBAUGH, JR., M.D.
CHICAGO, ILL.
GORDON D. HOOPLE, M.D.
SYRACUSE, N. Y.
ARAM GLORIG, M.D.
WASHINGTON, D. C.
and
JACQUELINE KEASTER
IOWA CITY, IOWA
BY INVITATION

THE FAMILY doctor is the one to whom the hearing handicapped first turns for advice and help. This directive describes the facilities that are available for the rehabilitation of the deaf and hard of hearing and is intended as an aid to the family doctor in guiding his patients.

Much can be done for the individual who is handicapped by deafness to enable him to take or to resume his place in the community as a self-supporting citizen. The rehabilitative measures needed by a particular patient will depend on the degree of hearing loss and the age at which the hearing was lost. Four types of cases will be considered: (a) the deaf child who has not acquired language, (b) the child with moderate impairment who has acquired language, (c) the adult with a moderate hearing impairment and (d) the adult with a profound loss.

THE DEAF CHILD

The acquisition of speech is essential for the normal development of the child. Words are symbols for things, and human thought is in terms of these symbols. Without language the complex processes of human thought cannot occur. The growing child normally begins to acquire language before 2 years of age. If a child is without hearing there will be a lack of ability to understand or use speech unless he has special training. It is extremely important that training begin as early as possible so that the deaf child may begin to use words at the earliest possible age. If his developing mind does not have word-symbols he will acquire substitute symbolic thought (i.e., sign language) that will make the later learning of speech much more difficult.

The diagnosis of deafness is therefore desirable at the earliest age to permit the special training that will help the child to learn speech as near to the normal age as possible.

Diagnosis

The fact that the child aged 2 has not begun to talk or respond when spoken to or called strongly suggests the probability of deafness and indicates the need for a definite diagnosis. This diagnosis should include an estimate of the severity of the hearing impairment and the probable etiology so that appropriate medical treatment can be applied if the impairment is of remediable type. In the great majority of instances profound hearing impairment in children is due to serious and irreversible nerve loss that cannot be improved or restored by any medical or surgical treatment. If this is the case, the family should be so informed so that they will not waste valuable months or years in a vain search for a medical "miracle."

Prepared by a Subcommittee of the Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology.

On the other hand there are a few cases of profound deafness in young children due in part or entirely to a remediable defect in the outer or middle ear. It is particularly important that these occasional cases be discovered early by accurate diagnosis so that appropriate measures can be applied to improve the hearing. Examples are congenital absence or atresia of the ear canal, congenital fixation of the ossicular chain, or obstruction of the eustachian tube superimposed on a congenital nerve loss of moderate degree.

The diagnosis of deafness in children under the age of 6 is often not easy and requires the services of specially trained personnel. The problem of diagnosis is complicated by instances of failure to learn speech due to central brain damage, and lack of response to sound because of an emotional block among those who have good hearing.

The County Medical Society will direct the general practitioner and his patient to an otologist competent in the technics of making an accurate diagnosis for the child who has not begun to talk by the age of 2. Sometimes when there are difficult diagnostic problems the otologist may wish to obtain further assistance from a recognized hearing clinic, or from specialists such as the psychologist or audiologist.

Rehabilitation

Having determined that the child has a profound hearing impairment that cannot be improved medically, the parents should be told that the facilities for the management of deafness are good in this country. The parents must be assured that with good training begun by them as early as possible in the home, the deaf child will learn to communicate satisfactorily by means of speech and lip reading. The speech of the deaf is never entirely normal but it can be understood. The deaf child can attain an education and become a good self-supporting citizen.

The importance of the parents and the home in the normal development and training of the young child cannot be overemphasized. It is usually better that the deaf child remain at home until school age and be trained by his parents.

The parents must be taught how to proceed. In many states there are courses for the parents of deaf children. If adequate help cannot be found locally, national organizations are prepared to give help.*

Before the age of 4 the deaf child will benefit greatly from attending a nursery school for normal hearing children. After the age of 3 to 4, if a day school for the deaf child is available in the community it should be added to the training program. Such a school specifically for deaf children is ordinarily housed in part of one of the elementary schools. If there is no day school, the child should be sent to a residential school, private or public, where the oral method is taught. The state or local Board of Education should be consulted concerning admission to such schools. Lists of private schools and the tuition fees may be procured from the American Hearing Society or the Volta Bureau.

In many cases preschool children can use a hearing aid with benefit, sometimes in the form of a table aid, at other

* American Hearing Society, 817 Fourteenth Street, N.W., Washington 5, D. C., and the Volta Bureau, 1537 Thirty-fifth Street, N.W., Washington 7, D. C. The John Tracy Clinic, 806 West Adams Boulevard, Los Angeles, California, publishes a correspondence course which will be sent free of charge to the parents of any deaf child below the age of 6.

There are several excellent books for the parents of deaf children, including:

Lassman, Grace H.: Language for the preschool deaf child, New York, Grune & Stratton, 1950, $5.00.

Myklebust, Helmer R.: Your deaf child; a guide for parents, Springfield, Illinois, Charles C Thomas, Publisher, 1950, $2.50.

School for Mothers of Deaf Children: If you have a deaf child, Danville, Illinois, Interstate Printers & Publishers, $1.00.

Utley, Jean: What's its name? Urbana, Illinois, University of Illinois Press, $2.00.

times a wearable aid. The decision as to whether or not a hearing aid should be purchased requires consultation and advice from the otologist and hearing clinic.

THE CHILD WITH MODERATE HEARING IMPAIRMENT

The child with a hearing impairment rarely complains of it; not having experienced normal hearing he is unaware of the sounds that he is missing.

If the child fails to respond when called, if he is accused of being inattentive, if he does poorly in school, or if his articulation is poor, hearing impairment should be suspected. Many cases of impaired hearing in children are detected only by routine hearing tests of all school children. This is an important part of the school health examination and should be universal in all schools.

Diagnosis

A large proportion of moderate hearing impairments in children are remediable by good medical treatment. Accurate diagnosis by a qualified otologist is particularly important so that whatever is necessary can be done to improve the hearing or to prevent further loss.

Rehabilitation

Many children with a moderate hearing impairment will benefit from a hearing aid. As soon as it has been determined by the otologist that nothing further can be done to restore the hearing by medical treatment, use of a hearing aid is one of the most essential steps that can be taken in terms of meeting the child's needs.

The degree and type of loss will determine whether a hearing aid is indicated, and which aid will give best results. The otologist may wish to obtain the help of a recognized hearing clinic to determine this. The child must have help in adjusting himself to the aid and training in interpreting the sounds it brings to him.

The child with a moderate loss has acquired speech but his hearing defect often results in poor articulation. This requires speech correction by a specialized teacher.

The moderately deaf child will need speech reading (lip reading) to supplement his hearing. This also requires a specialized teacher. Information concerning special teachers or classes or schools in the community for speech reading and speech correction can be obtained from the otologist, hearing clinic or the local or state Department of Education.

The child with moderately impaired hearing who can wear a hearing aid and receive help in speech reading and speech correction will be better off, in general, in a class of normally hearing children. However, he should always occupy a seat close to the teacher and between the teacher and the window, so that the light falls on the teacher's face.

THE ADULT WITH A MODERATE HEARING IMPAIRMENT

Diagnosis

As in the child with impaired hearing, so too in the adult with a moderate hearing loss, accurate diagnosis is particularly important. The hearing in many such cases can be improved by medical or surgical treatment, while in others further loss may be prevented. The otologic study should include a statement of the degree of hearing loss, whether it is of the nerve type, the conductive type, or both, its probable etiology and the prognosis.

Examples of remediable hearing loss in adults are obstruction of the eustachian tubes, perforation of the drum membrane and chronic draining ears. As in children so too in adults, certain chronic ear infections are of the bone-invading type and may require surgery to prevent intracranial extension. In recent years the fenestration operation, a

highly technical procedure requiring special training and facilities for satisfactory results, has been developed. This operation has made possible the restoration of practical serviceable hearing to many adults with progressive deafness due to otosclerosis.

Examples of preventable hearing loss in adults are occupational deafness from excessive noise and toxic deafness from certain drugs. Dihydrostreptomycin can cause a delayed form of severe irreversible nerve deafness that may not begin until several weeks after cessation of administration of the drug. Streptomycin less often damages the hearing, but it should be used cautiously.

Occupational noise deafness occurs from prolonged exposure to excessive noise, especially where the noise is explosive (motor, tractor or gun) or is produced by riveting or stamping operations. The prevention of noise deafness includes the discovery of noise-susceptible individuals by periodic testing of the hearing of individuals in noisy environments, the use of ear protectors and improved industrial design to reduce noise levels.

Examples of nonremediable hearing loss are nerve degeneration due to age (presbycusis), certain cases of otosclerosis with nerve degeneration, and cases of nerve deafness of unknown etiology.

The family physician should know that airplane rides cannot restore hearing in organic deafness.

The value of vitamins in the treatment of deafness is still a debatable question. There may be fluctuations in hearing due to a number of causes or independent of treatment. Patients with head noises (tinnitus) should be referred to an otologist for diagnostic studies.

Rehabilitation

Many adults with impaired hearing that cannot be improved by medical or surgical therapy will be benefited by a hearing aid. An instrument has the advantage of amplifying sound although it does not improve the organic loss or prevent further deterioration in hearing. A hearing aid is rarely required until a handicapping loss is present (usually 30 db. or more) for the speech frequencies in the better hearing ear. For the majority of adults with impaired hearing an appropriate hearing aid accepted by the American Medical Association Council on Physical Medicine and Rehabilitation will give satisfactory performance. The aid selected should be one for which good service is available in the community.

In most cases of impaired hearing of the nerve type the selection of a satisfactory hearing aid is more of a problem. This may require special tests in a recognized hearing rehabilitation center. As in the child, training in the use of the aid is advisable.

Speech reading (lip reading) is of help to everyone having any degree of hearing loss. (Even normally hearing persons use speech reading more than they appreciate.) As the hearing becomes progressively impaired, speech reading becomes increasingly important and necessary. Some individuals attain a degree of proficiency in speech reading without formal instruction, but a series of lessons by a special teacher may enhance the skill. The local chapter of the American Hearing Society or the Volta Bureau will supply information concerning available teachers or classes. The local superintendent of schools may also supply this information.

THE ADULT WITH A PROFOUND HEARING LOSS

Diagnosis

Accurate diagnosis and determination of the degree of the hearing loss is necessary also in adults with a profound hearing loss. In occasional cases medical

or surgical therapy can restore a useful amount of hearing. Examples are some cases of advanced otosclerosis, psychogenic hearing loss, and labyrinthine hydrops (Ménière's disease).

As a general rule, however, profound deafness in adults as in children is of the nerve type for which there is no medical treatment at the present time.

Rehabilitation

Adults who have been deaf from early childhood and who did not learn speech at an early age will have great difficulty in learning speech and language. Many of them use the sign language with satisfaction.

Persons who lose their hearing suddenly or gradually need instruction in speech conservation in order to maintain as nearly normal speech as possible. Speech reading (lip reading) is very essential for these people and regular lessons should be taken. An exception may be in advanced age when it is more difficult to acquire new skills and it may be good judgment not to insist on speech reading lessons.

A hearing aid should be worn by the profoundly deafened adult if at all possible. Some will receive some benefit from a hearing aid but will require training for its effective use. Others with advanced nerve degeneration will receive little or no help. The decision as to whether or not a hearing aid will be useful to such a patient should rest with the otologist or the hearing rehabilitation center. Special tests will demonstrate the possible value and limitations of a hearing aid, as well as the particular aid best suited to the patient's needs.

THE DEAF AND THE DEAFENED IN AMERICA, 1951

This economic survey of hearing in the United States was prepared for the Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology by Tamblyn and Brown, Inc., and a limited number of copies is available in this office upon request.

SECTION ON INSTRUCTION

FIFTY-EIGHTH ANNUAL MEETING

American Academy of Ophthalmology and Otolaryngology

October 11-16, 1953
PALMER HOUSE
Chicago, Illinois

A. D. RUEDEMANN, M.D.
Secretary for Instruction — Ophthalmology

DEAN M. LIERLE, M.D.
Secretary for Instruction — Otolaryngology and Maxillofacial Surgery

This Section presents for 1953:

Ophthalmology: 118 Individual Courses, including 10 home study course discussion periods and 2 special courses; 45 Continuous Courses. The faculty is comprised of 204 instructors, and the hours of instruction total 416.

Otolaryngology: 118 Individual Courses; 28 Continuous Courses and Panel Discussions. The faculty is comprised of 152 instructors, and the total number of instruction hours is 293.

General Instructions

Only members who have paid their 1953 *dues may order instruction tickets in advance of the meeting.* Members should order tickets only for their own use. Candidates for fellowship in the Academy are not privileged to reserve tickets in advance. After the session opens, no distinction between members, candidates and guests will be made in selling tickets.

Each period (1 hour) of instruction costs $2.00. *Orders unaccompanied by properly executed checks will not be filled.* Checks should be made payable to W. L. Benedict, M.D.

In case of inability to attend the meeting after order has been filled, a refund will be granted if requested prior to October 9.

If courses requested are not available and it is impossible to substitute, a refund will be granted. Refunds will not be sent by mail. A blue refund card will be placed in the Advance Registration Envelope which is received at the time of registration. This should be presented at the Instruction Desk for payment.

All orders for tickets will be filled according to postmark on envelope containing check. Telegrams will not be honored. Previous to October 1, send orders to 100 First Avenue Building, Rochester, Minnesota; after October 1, mail orders direct to W. L. Benedict, M.D., c/o Palmer House, Chicago, Illinois. Advance orders will not be filled if received after October 8.

Ordering Instruction Tickets

An *individual* course is complete in one (1) period. Most individual courses are repeated on two or three different days allowing the subscriber to choose the day on which he wishes to attend.

A *continuous* course lasts two (2) or more periods as indicated. It is not pos-

sible to purchase a ticket to only *part* of a continuous course.

At the end of this section is printed a colored sheet to be used when ordering tickets in advance. Specify preferences on this sheet and mail to the executive office. Careful attention to instructions will ensure the correct filling of your requests. *Since number of tickets for each course is limited, be sure to list second and third preferences for each period in case first preference is already sold out. In every case, effort will be made to furnish first choices.*

If you are requesting registration in the continuous courses, please specify preferences for individual courses as substitutes in order to avoid disappointment should the continuous courses which you select be sold out when your order is received.

Acknowledgment of Advance Order

As soon as an advance order is filled, a postcard, listing the courses that have been reserved for him, will be mailed to the subscriber. Please do not ask to change courses after your order has been filled. The postcard is merely an assurance that your order has been filled; it is not necessary for registration at the Academy meeting.

Claiming Instruction Tickets

No tickets will be sent through the mails. Members who have ordered instruction course tickets will register at the *Advance Order Section* of the Registration Desk during the week of the Convention to secure registration badge, tickets, and all convention material.

KEY TO DESIGNATION OF PERIODS

The periods will be designated with the following key: Select tickets for — Otolaryngology, forenoons, periods 1-2-3 — Ophthalmology, afternoons, periods 4-5-6

Day	(M)onday	(T)uesday	(W)ednesday	(Th)ursday
Period a.m.		1 2 3	1 2 3	1 2 3
Period p.m.	4 5 6	4 5 6	4 5 6	4 5 6

M-4	2:00 p.m. to 3:00 p.m.	W-4	2:00 p.m. to 3:00 p.m.
M-5	3:15 p.m. to 4:15 p.m.	W-5	3:15 p.m. to 4:15 p.m.
M-6	4:30 p.m. to 5:30 p.m.	W-6	4:30 p.m. to 5:30 p.m.
T-1	9:00 a.m. to 10:00 a.m.	Th-1	9:00 a.m. to 10:00 a.m.
T-2	10:15 a.m. to 11:15 a.m.	Th-2	10:15 a.m. to 11:15 a.m.
T-3	11:30 a.m. to 12:30 p.m.	Th-3	11:30 a.m. to 12:30 p.m.
T-4	2:00 p.m. to 3:00 p.m.	Th-4	2:00 p.m. to 3:00 p.m.
T-5	3:15 p.m. to 4:15 p.m.	Th-5	3:15 p.m. to 4:15 p.m.
T-6	4:30 p.m. to 5:30 p.m.	Th-6	4:30 p.m. to 5:30 p.m.
W-1	9:00 a.m. to 10:00 a.m.		
W-2	10:15 a.m. to 11:15 a.m.		
W-3	11:30 a.m. to 12:30 p.m.		

(Familiarity with this key will be helpful and will avoid confusion)

1953

CONTINUOUS COURSES — OPHTHALMOLOGY

COURSE 1

Room 738 Periods M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5

JAMES H. ALLEN, M.D., et al.

Bacteriology and Infectious Diseases of the Eye

An eight-period course—$16.00

The first hour of the course will be devoted to bacteriology and methods of etiologic diagnosis of infectious diseases. Six hours will be devoted to the clinical manifestations and differential diagnosis of infectious and allergic diseases of the eye, and one hour will be devoted to a general summary of the therapy of infectious diseases.

M-4—Bacteriology
James H. Allen, M.D.
New Orleans, La.

M-5—Infections of the Lids and Lacrimal Apparatus
Hugh Ormsby, M.D.
Toronto, Ont., Canada
BY INVITATION

T-4—Bacterial Infections of the Conjunctiva
Isadore Givner, M.D.
New York, N. Y.

T-5—Virus Infections of the Lids and Conjunctiva
Phillips Thygeson, M.D.
San Jose, Calif.

W-4—Infectious Diseases of the Cornea
Trygve Gundersen, M.D.
Boston, Mass.

W-5—Allergic Diseases of the Lids, Conjunctiva, and Cornea
Frederick H. Theodore, M.D.
New York, N. Y.

Th-4—Infections of the Orbit and Globe (to include surgical infections)
Henry Allen, M.D.
Boston, Mass.
BY INVITATION

Th-5—Therapy of Infectious Diseases
Alson E. Braley, M.D.
Iowa City, Iowa

COURSE 2

Room 712 Periods M-5, M-6

KARL W. ASCHER, M.D.
Cincinnati, Ohio
BY INVITATION

Aqueous Veins and Aqueous Veins in Glaucoma

A two-period course—$4.00

Recent histologic investigations have confirmed that the aqueous veins originate from outlets of the canal of Schlemm. They respond consistently to physiologic and experimental factors. Mathematical evaluation of anatomic data elucidates the pressure gradients in normal and in glaucomatous eyes. In the latter, compression phenomena differ from those in normal eyes. In a glaucomatous eye, compression of a recipient vessel of an aqueous vein will rarely produce aqueous influx as it often does in eyes with normal pressure. More pressure must be exerted on the cornea of the glaucomatous eye than on a normal-pressure eye to broaden the clear stream in the aqueous vein. Although the aqueous veins have not as yet offered a clinically useful glaucoma test, recent tonographic data and the pathogenesis of chronic simple glaucoma may be at least partly explained by study of the outlets of the canal of Schlemm.

COURSE 3

Room 724 Periods M-5, T-5, W-5, Th-5

ARTHUR J. BEDELL, M.D.
Albany, N. Y.

Medical Ophthalmoscopy

A four-period course—$8.00

A review of the common and rare fundus lesions. A demonstration of more than 600 kodachrome fundus photographs. Hypertension, diabetes, nephritis, tuberculosis, syphilis, the blood states, increased orbital and intracranial pressure as evidenced by papilledema, optic neuritis of various types, and the optic atrophies will be presented and discussed.

COURSE 4

Room 724 Periods M-4, T-4, W-4, Th-4

MILTON L. BERLINER, M.D.
New York, N. Y.

Slit Lamp Microscopy: Advanced Technics

A four-period course—$8.00

The purpose of this course is to review the different methods of illumination and to show their practical application in the observation of normal and pathologic findings. To be considered among these are scatter, direct focal, retroillumination, and specular reflection. A rapid method for the systematic examination of the eye by these methods is explained. Appliances and technics for the biomicroscopic examination of the deeper vitreous and fundus will be demonstrated and discussed. Also to be stressed is the importance of examination of preoperative and postoperative cases by these methods. Numerous lantern slides will be used to illustrate special clinical entities. Newer conceptions of lens changes (cataracts) and vitreous alterations will be presented.

COURSE 5

Room 713 Periods M-4, T-4, W-4

HENRY L. BIRGE, M.D.
Hartford, Conn.

F. L. PHILIP KOCH, M.D.
Bronxville, N. Y.

and

CHARLES M. BARBOUR, M.D.
Hartford, Conn.

BY INVITATION

Important New Theories of Vascular Disease: The Importance of Blood Volume in Ophthamology

A three-period course—$6.00

We are primarily interested in the application of new theories of blood volume study to: (1) retinal venous thromboses, (2) cerebral thromboses, (3) surgical hyphemia and other bleeding, (4) expulsive choroidal hemorrhage, (5) exacerbations of diabetic retinal hemorrhages, (6) anesthetic risks in geriatric surgery, and (7) proper preoperative preparation in all eye surgery.

This three-hour lecture will be composed of a discussion (1) of the laboratory data concerned with blood volume, (2) of the general clinical applications of blood volume from the point of view of preoperative preparation and anesthetic risks, (3) of the important factors that affect ophthalmic diseases when there are excesses of blood volume, and (4) of the ophthalmic diseases that are caused or complicated by deficits in blood volume.

Case histories will be reviewed. There will be comments on the relationship between the hemoglobin determinations, the hematocrit, and the blood volume. There will be a discussion of the diagnosis of polycythemia from the ophthalmic findings, and a statement of the indications for the use of blood volume in the prevention of ophthalmic disease as well as the therapy.

COURSE 6

Room 706 Periods T-5, T-6

PAUL BOEDER, Ph.D.
Southbridge, Mass.

Aniseikonia and Space Eikonometry: Practical Application

A two-period course—$4.00

First, a brief review of aniseikonia will be given, including a discussion of its causes, symptoms, incidence, iseikonic lenses and clinical results obtained.

The effects of aniseikonia on binocular space perception will then be explained, demonstrated and developed into the principles of space eikonometry. The space eikonometer and methods of measurement will be described and demonstrated, and an opportunity given for actual practice of the newest eikonometric methods with the latest instruments.

COURSE 7

Room 795 Periods M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5

HAROLD W. BROWN, M.D., et al.
Eye Muscles

An eight-period course—$16.00

M-4 & 5—Physiology and Pathology of the Ocular Muscles

Harold W. Brown, M.D.
New York, N. Y.

The physiologic action of the individual muscles, conjugate and disjunctive movements (convergence, divergence) will be discussed and illustrated. From these normal physiologic acts, the pathologic variations

are developed and classified. Various methods of diagnosis, measurements of deviation and the surgical and nonsurgical correction of these deviations will be presented.

T-4 & 5—Congenital Anomaties

Rudolf Aebli, M.D.
New York, N. Y.

The subject matter will cover the more usual congenital anomalies such as retraction syndrome and its variations, strabismus fixus, Marcus Gunn jaw winking syndrome, paralyses of both elevators of one eye with true and pseudoptosis, and also congenital individual muscle anomalies. Differential diagnosis and treatment, if any, will be discussed.

W-4—Tests

Harold W. Brown, M.D.

Tests in common use will be briefly described and the relative merits discussed. Emphasis will be placed on the screen cover test and its modifications. A practical routine muscle test will be outlined and the technic of the various procedures will be described in detail.

W-5—Surgical Technics in the Management of Motor Anomalies

William B. Clark, M.D.
New Orleans, La.

A thorough understanding of the anatomy and physiology of the ocular muscles is essential before an effective tchnic in the surgical treatment of motor anomalies can be perfected. A discussion of the dissection of tissues in layers, the preservation of Tenon's capsule covering the muscle, the severing of check and lateral ligaments, the use of suture materials for reattaching muscles to the sclera, and closure of the wounds will be discussed in detail.

Th-4 & 5 — Surgery of the Extraocular Muscles

Harold W. Brown, M.D.
and
Rudolf Aebli, M.D.

The indications and contraindications for surgical correction of heterophoria and heterotropia will be discussed. Special emphasis will be placed on the methods used in selecting the proper muscle or muscles to be operated on and the amount of correction that can be expected from the different types of surgical procedures.

COURSE 8

Room 713 Periods M-5, M-6

COL. VICTOR A. BYRNES (MC)
Randolph Field, Texas

Ophthalmic Filters

A two-period course—$4.00

Before any type of ophthalmic filter is prescribed the following factors must be considered:

(a) What is the composition of the light that is present?
(b) What effects do these components have on the eye?
(c) What effects do various filters have on these light components?
(d) What is the effect of these altered components on the eye and its functions?

These factors will be discussed together with sunglasses of different shades and the advantages and disadvantages of each; tinted lenses for constant wear; types of tinted lenses for night driving and their defects; tinted windshields, and their transmission curves, uses and disadvantages; reflecting filters and their uses; relative merits of glass and plastic lenses and the use of sunglasses with corrections for refractive errors; the strength correction which can be satisfactorily ground in large-size sunglass lenses; defects of clip-on lenses, shooting glasses and polarizing lenses and their uses.

COURSE 9

Room 734 Periods M-5, M-6, T-5, T-6, W-5, W-6

ALSTON CALLAHAN, M.D., et al.

Fundamentals of Ophthalmic Plastic Surgery

A six-period course—$12.00

The basic principles necessary for successful surgical management of the simpler plastic eye and lid problems will be presented. This course is designed for those with limited experience in this field of ophthalmic endeavor. At a more elementary level it is correlated with the advanced course in ophthalmic plastic surgery.

Fundamental Principles

Deane C. Hartman, M.D.
Los Angeles, Calif.

Surgical anatomy of the lids; hemostatics, instruments and sutures; grafts, flaps and implants; Z-plastic procedure; preoperative and postoperative care.

Plastic Repair of Deformities Resulting from Lesions of the Conjunctiva and Ocular Adnexa

J. Gordon Cole, M.D.
New York, N. Y.

Lacerations of the Lid and Lacrimal System, Simple Entropion and Ectropion

Joseph C. Hill, M.D.
Toronto, Ont., Canada

Ptosis, Blepharochalasis, Simple Enucleation, Evisceration and Buried Implants

Alston Callahan, M.D.
Birmingham, Ala.

COURSE 10

Room 713 Periods T-5, T-6

WILLIAM B. CLARK, M.D.
New Orleans, La.

Surgery of Ocular Muscles

A two-period course—$4.00

A review of the surgical anatomy and the physiology of the ocular muscles will be presented. Effort will be made to rationalize the use of certain procedures with the anatomy and physiology of the eye muscles. The selection of the type of procedure to plan to follow for certain anomalies will be discussed along with the preliminary preparation of the patient for surgery, the choice of the anesthetic agent, and the postoperative care of the patient.

COURSE 11

Room 793 Periods M-4, M-5, T-4, T-5

COURSE 12

Room 793 Periods W-4, W-5, Th-4, Th-5

JACK C. COPELAND
Chicago, Ill.
BY INVITATION

Streak Retinoscopy

A four-period course—$8.00

This four-hour course is being presented twice, as Course 11 on Monday and Tuesday and as Course 12 on Wednesday and Thursday. **Please select course number according to days on which you wish to attend.**

The following outline describes the steps of the demonstration.

1. Determination of the neutral point.
2. Revealing low astigmatic errors.
3. Locating the zone of the astigmatic band.
4. Determining the power of the cylinder.
5. Estimating the type and degree of error without lenses.
6. "Guide Angle" technic, in refining axis position.
7. Plus cylinder procedure.

COURSE 13

Room 710 Periods M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6

FRANK D. COSTENBADER, M.D., et al.

Comitant Strabismus: Physiology and Management

A twelve-period course—$24.00

This course is designed to teach **the why** of strabismus, as well as **the what to do for strabismus.** The "rule of reason" is emphasized rather than the "rule of thumb."

The order of listing of the lectures makes evident our intent to show (1) how eyes may align and see together, (2) what happens when they can no longer see together, and finally, (3) what can be done to restore them to as nearly normal function as possible.

M-4—Frank D. Costenbader, M.D.
Washington, D. C.

Binocular positions and movements. Movements eyes make and why; positions they assume and why; the reflexes controlling these movements and positions.

M-5—Hermann M. Burian, M.D.
Iowa City, Iowa

Binocular vision. Physiologic basis of normal binocular vision; conditions necessary for its achievement.

M-6—Frank D. Costenbader, M.D.

Dissociation and binocular adaptations. What factors interrupt binocular vision; the sensory and motor adaptations to this interruption.

T-4—Hermann M. Burian, M.D.

Sensory adaptations. Suppression, amblyopia ex anopsia, anomalous correspondence; their essence and treatment.

T-5—Marshall M. Parks, M.D.
Washington, D. C.

Accommodation-convergence. Methods of determination and norms of accommodation and convergence. The relationship of accommodation and convergence; the method by which this relationship is measured, and norms for this relationship.

T-6—Hermann M. Burian, M.D.

Diagnostic principles. Principles underlying the tests to determine status of motor and sensory cooperation of the eyes. The essence of the various tests.

W-4—Hermann M. Burian, M.D.

Diagnostic technics. How the tests for motor and sensory cooperation of the eyes should be performed and how variations in technic affect the result obtained.

W-5—Frank D. Costenbader, M.D.

Therapeutic principles and methods. The methods of achieving the goals of (1) good vision, (2) good alignment, and (3) good binocular vision.

W-6 & Th-4—Marshall M. Parks, M.D.

Esotropia. The recognition and management of (1) intermittent and (2) constant esotropia.

Th-5 & Th-6—Frank D. Costenbader, M.D.

Exotropia. The recognition and management of (1) convergence insufficiency, (2) intermittent exotropia, and (3) constant exotropia.

Throughout the course, diagnostic and therapeutic technics will be demonstrated and discussed, and illustrative cases will be cited.

COURSE 14

Room 712 Periods W-4, W-5

A. GERARD DeVOE, M.D.
New York, N. Y.

Clinical Application of Gonioscopy

A two-period course—$4.00

This course will review the fundamentals of gonioscopy as well as controversial points.

Anatomy and instrumentation will be described in detail. Attention will then be directed to important clinical conditions in which gonioscopy may be of value. These include injuries, all types of glaucoma, uveitis, tumors, congenital anomalies, preoperative and postoperative examination of certain eyes.

COURSE 15

Room 711 Periods T-4, W-4, Th-4

JOHN H. DUNNINGTON, M.D.
GRAHAM CLARK, M.D.
New York, N. Y.

Retinal Detachment

A three-period course—$6.00

Important factors in the diagnosis and the surgical technics in the treatment of retinal detachment, with special attention to prognostic signs and the effects of the various electrical currents employed, will be discussed.

COURSE 16

Room 711 Periods M-5, T-5, W-5

WALTER H. FINK, M.D.
Minneapolis, Minn.

Management of Oblique Muscle Problems

A three-period course—$6.00

The presentation will be divided into two parts:

I. Management of superior oblique problems

II. Management of inferior oblique problems

Each part will be considered under the following headings:

a. Importance of the defect as an obstacle to binocular action
b. Diagnostic criteria
c. Principles involved in management
d. Anatomical factors which determine the surgical technic (muscle-insertion-adjacent structures)
e. Effective surgical procedures
   1. Discussion of various methods
   2. Evaluation of results
f. Present status of problem

Current opinion and personal experience will be considered. Cases will be cited to illustrate points discussed.

COURSE 17

Room 706 Periods M-4, M-5

JONAS S. FRIEDENWALD, M.D.
Baltimore, Md.

Studies in Aqueous Flow

A two-period course—$4.00

I. Estimation of Aqueous Flow by Tonography

An analysis will be given of the sources of error in tonography and of the limits of accuracy in the present procedure.

II. Estimation of Aqueous Flow by Fluorescein Turnover

The general problem of estimating aqueous flow from the turnover of some test substance injected intravenously will be discussed. The limits of accuracy of the presently available procedures will be indicated.

COURSE 18

Room 711 Periods T-6, W-6, Th-6

GEORGE P. GUIBOR, M.D.
Chicago, Ill.

Orthoptics: Office and Home Technics

A three-period course—$6.00

This course will be conducted as a seminar with discussions directed to patients with conjugate disturbances, paralytic and nonparalytic deviations, accommodative anomalies, and reading disabilities.

Early diagnosis of motor defects in infants and treatment methods used in the office and at home will be presented. Appraisal of the visual acuity in infants with the prognosis and treatment for such visual defects will be discussed.

The decision concerning the course of a defective reading ability often rests with the examining ophthalmologist. Is the cause of a reading disability subnormal oculomotor coordination or poor application on the part of the student? Practical suggestions for remedying such reading disabilities will be shown.

COURSE 19

Room 732 Periods M-4, T-4, W-4, Th-4

LeGRAND H. HARDY, M.D.
New York, N. Y.
EDMOND L. COOPER, M.D.
Detroit, Mich.
DANIEL SNYDACKER, M.D.
Chicago, Ill.
and
ELIZABETH K. STARK
New York, N. Y.
BY INVITATION

Basic Principles of Orthoptics

A four-period course—$8.00

This course will consist of three lecture-discussion periods and one practical discussion seminar. The basic laws of learning, especially as they relate to the acquisition of motor skills, will be presented, the methods and results of orthoptics evaluated (Hardy); the special problems presented by children will be discussed (Cooper); the different nature of the adult problem and methods for meeting it will be presented (Snydacker); and one session will be devoted to the analysis of the most common problems and pitfalls encountered in office and clinical orthoptics with methods of solving them (Stark).

COURSE 20

Room 733 Periods M-4, M-5, T-4, T-5

JOHN WOODWORTH HENDERSON, M.D.
Ann Arbor, Mich.

Practical Perimetry

A four-period course—$8.00

The basic principles of perimetry together with their clinical applications using actual patient case reports and field examples. Localization along the visual pathway will be stressed. There will be a short discussion of the value of flicker fusion perimetry as a supplement to the usual methods.

COURSE 21

Room 752 Periods M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5

WENDELL L. HUGHES, M.D., et al.

Ophthalmic Plastic Surgery: Advanced Course

An eight-period course—$16.00

This course is designed for those who have taken the fundamental course (Course 9) given by Dr. Alston Callahan et al. or a course of similar scope. These two courses are coordinated.

It is suggested that the fundamental course be taken first and next year the advanced course be taken by those who have an interest in reparative work but have had little formal training.

Advanced reparative work for many conditions requiring major or complicated procedures will be considered.

COURSE 22

Room 712 Periods T-5, T-6

FRITZ JARDON
Detroit, Mich.
BY INVITATION

Fitting of Ocular Prostheses

A two-period course—$4.00

In previous courses it was demonstrated that it is most practical and most satisfactory to fit patients in the ophthalmogist's office because of the lack of prosthesis-fitting facilities in many large areas of the country.

The entire field of prosthesis-fitting, following various surgical procedures, will be discussed. Subjects of interest include enu-

cleation, evisceration, Tenon's capsule implants, integrated implants, secondary implants and socket restoration.

A demonstration of restored sockets using pressure conformers will be presented. Those sockets that are difficult to fit, their preparation for good functioning prostheses, and methods which give best cosmetic end results will also be discussed.

COURSE 23

Room 715 Periods M-4, M-5

COURSE 24

Room 715 Periods T-4, T-5

LORAND V. JOHNSON, M.D.
and
E. J. BALLINTINE, M.D.
BY INVITATION
Cleveland, Ohio

Aqueous Tonography

A two-period course—$4.00

This two-hour course is being presented twice, as Course 23 on Monday, and as Course 24 on Tuesday. **Please select course number according to day on which you wish to attend.**

Tonography is a method for investigating aqueous humor dynamics which yields information clinically useful in treatment of glaucoma. The method consists in recording continuously for four or five minutes the readings of a Mueller Electronic tonometer which is resting on the eye. From the resulting curves of tonometer readings two factors can be calculated, one of which (C, "the facility of outflow") measures the ease with which aqueous humor is squeezed out of the eye. The other (K, "the rate of aqueous production") is an indication of the rate at which aqueous humor is being secreted.

During the first part of the course assumptions on which the calculations are based will be reviewed. In the second part of the period the apparatus will be demonstrated on a patient, the curve obtained and measured, and the factors calculated. The period will conclude with a discussion of the clinical applications of the measurements and questions relative to material covered.

COURSE 25

Room 728 Periods M-5, M-6

COURSE 26

Room 728 Periods T-5, T-6

VINCENT C. JOHNSON, M.D.
BY INVITATION
and
HENRY A. DUNLAP, M.D.
Detroit, Mich.

Diagnostic Value of X-ray in Ophthalmology

A two-period course—$4.00

This two-hour course is being presented twice, as Course 25 on Monday and as Course 26 on Tuesday. **Please select course number according to day on which you wish to attend.**

Roentgenograms properly made will demonstrate the osseous structures about the orbits in detail. Multiple projections have been designed to show structures in this area to the best advantage; the technics commonly employed will be discussed, and resulting roentgenograms will be displayed. The interpretation of such roentgenograms, of course, requires knowledge of roentgen anatomy. For this reason a part of our discussion will be devoted to a detailed explanation of the various shadows that may be observed in the roentgen studies of this region. For the sake of completeness, a brief discussion of the roentgen anatomy of the entire skull will be included.

In addition to discussion of the normal skull and orbital areas, multiple pathologic situations will be adequately illustrated and discussed. It is known that the roentgenogram is capable of displaying fractures about the orbits which may result in alteration of orbital contents. Roentgen opaque foreign bodies in the eye can be identified and accurately localized by multiple roentgen methods. Every effort will be made to completely describe and display such traumatic situations.

Since it is believed that abnormalities in the paranasal sinuses adjacent to the orbital areas may affect the eye, we shall briefly demonstrate and discuss the roentgen signs of pathologic changes involving these cells.

A considerable portion of the discussion will be devoted to description and illustration of the roentgen manifestations of intracranial lesions which may be located in all parts of the head, since the ophthalmologist is frequently called upon to aid not only in the diagnosis but also in the localization of such lesions. Some intracranial lesions may be recognized by localized bone changes or by calcification within these lesions; others require additional studies, such as encephalograms and ventriculograms. Arteriography has also proved to be of assistance in this localization in certain selected instances.

Numerous roentgenograms of localizing value in multiple cases will be shown on slides.

Occasionally the intraorbital structures may be altered, chiefly by calcification, which can be recognized on the roentgenograms, and some of these situations will be included and illustrated.

COURSE 27

Room 722 Periods M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5

WILLIS S. KNIGHTON, M.D., et al.

Highlights of Glaucoma

An eight-period course—$16.00

A discussion of glaucoma designed to present modern concepts of etiology, classification and management. Basic principles will be outlined, leaving time for the student to participate in a round table discussion.

M-4—Classification and Diagnosis
Willis S. Knighton, M.D.
New York, N. Y.

M-5—Wide Angle Glaucoma
Edwin B. Dunphy, M.D.
Boston, Mass.

T-4—Narrow Angle Glaucoma
Paul A. Chandler, M.D.
Boston, Mass.

T-5—Secondary Glaucoma
A. Gerard DeVoe, M.D.
New York, N. Y.

W-4—Pathology
Joseph A. C. Wadsworth, M.D.
New York, N. Y.

W-5—Medication
P. Robb McDonald, M.D.
Philadelphia, Pa.

Th-4—Surgery
Harold G. Scheie, M.D.
Philadelphia, Pa.

Th-5—Round Table Discussion

COURSE 28

Room 702 Periods M-4, T-4, W-4

HEDWIG S. KUHN, M.D.
Hammond, Ind.

Industrial Ophthalmology

A three-period course—$6.00

M-4—What constitutes an over-all modern eye program? A discussion of choice of visual program according to type and size of industry; discussion of visual testing in industry, visual skills recorded, instrumentation used, policies and objectives of testing programs; discussion of visual skills as matched to job demands in various industries; color and illumination (illustrated with slides).

T-4—Eye Injuries: Types of injuries; full discussion of elements of successful eye protection programs; handling of injuries in plant dispensary by nurses and attendants; handling of injuries in ophthalmologist's office (illustrated by slides).

W-4—Eye Correction Problems and Objectives: On what basis employees are referred out for correction; what constitutes occupational correction; where, how and when are refractions carried out. A fully illustrated discussion of visual skills and their relationship to optical aids and refractive errors corrected by safety or regular glasses.

COURSE 29

Room 740 Periods M-5, T-5

RALPH I. LLOYD, M.D.
Brooklyn, N. Y.

Macular Lesions: Differential Diagnosis

A two-period course—$4.00

Adequate pathology is essential to sound diagnosis. Unless a diseased eye is painful or endangers life or the vision of the other eye, it does not reach the laboratory, leaving an important group with incomplete data. Ophthalmoscopy then becomes the most important means to establish the diagnosis of a group including senile chororetinal lesions, the hereditary macular degenerations, errors of development, and atypical tumors. The modern hand ophthalmoscope is indispensable but kodachromes and paintings of various stages over an extended period with binocular ophthalmoscopy and the limited pathologic material available, are great helps in difficult cases. Results of the use of all of these means will be offered and preference given to the senile group, hereditary macular degeneration and tumors, after which other less frequently seen types will be discussed as far as time allows.

COURSE 30

Room 721 Periods M-4, M-5

COL. AUSTIN LOWREY, JR. (MC)
San Francisco, Calif.

COL. ARNOLD A. ALBRIGHT (MC)
Battle Creek, Mich

Military Ophthalmology

A two-period course—$4.00

A discussion of eye casualties including injuries to adnexa and orbit, causative agent, missile and types of wounds produced, effects of atomic weapons, blast and chemical warfare agents, with the various types of wounds, burns, and radiation damage resulting from these weapons, and methods of protection and treatment, will be presented.

The echelons of medical care for the eye casualty including first aid treatment, evacuation, definitive care, rehabilitation and disposition will be considered. A statistical review will be given for the best methods in caring for large groups of cases (ocular contusions and their complications, intraocular foreign bodies, burns, enucleation and ocular implants).

COURSE 31

Room 796 Periods M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6

JOHN M. McLEAN, M.D.
New York, N. Y.

JACK S. GUYTON, M.D.
Baltimore, Md.

A. E. MAUMENEE, M.D.
San Francisco, Calif.

Cataract Surgery

A twelve-period course—$24.00

A course on the technic of intracapsular cataract extraction. It includes detailed discussion of preoperative and postoperative management, anesthesia and akinesia, various types of incisions and sutures, management of iris, methods of intracapsular lens delivery, and indications. Operative and postoperative complications. Motion picture and lantern slide demonstrations.

COURSE 32

Room 702 Periods Th-4, Th-5

RAYMOND E. MEEK, M.D.
New York, N. Y.

Surgical Anatomy of the Orbit

A two-period course—$4.00

In this lecture an attempt will be made to link up the important surgical procedures with the basic anatomy of the orbit. In important operations the surgeon quite frequently becomes confused as to which tissues are involved. This is absolutely unnecessary if the evaluation is based on a knowledge of the anatomy.

The anatomy of the septum orbitale is of utmost importance. It is also important to know the structure of the bony well of the orbit in order that a Kronlein operation or Reese's modification may be performed. A study of the angle of the anterior chamber shows how the root of the iris may block the angle and how the iris presses against the anterior surface of the lens, blocking the flow of aqueous through the pupil. This explains why we get primary attacks of glaucoma and also why, after a period of time and repeated attacks, the iris grows forward, attaching itself to the posterior surface of the cornea and blocking off the angle. It is important to know these anatomic points to understand deep angle glaucoma and shallow angle glaucoma. In fact, any procedure of a surgical nature about the eye cannot be performed skillfully without a fair knowledge of the anatomy.

COURSE 33

Room 744 Periods M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5

SAMUEL J. MEYER, M.D., et al.

Glaucoma

An eight-period course—$16.00

The fundamentals of glaucoma will be elaborated upon with considerable emphasis placed on the essentials of the early diagnosis. Both the medical and the surgical treatment will be given in minute detail including the use of the newer drugs that are being tried out both experimentally and clinically. The various newer diagnostic aids as advocated in the recent literature will be given considerable thought.

M-4—The Glaucomas: Definition, Mechanisms, Classifications
Peter C. Kronfeld, M.D.
Chicago, Ill.

M-5—The Histopathology of Acute and Chronic Glaucoma
Merrill J. Reeh, M.D.
Portland, Ore.

T-4—Wide Angle or Compensated Glaucoma
Samuel J. Meyer, M.D.
Chicago, Ill.

T-5—Narrow Angle Glaucoma
Joseph S. Haas, M.D.
Chicago, Ill.

W-4—Gonioscopy
H. Isabelle McGarry, M.D.
Evanston, Ill.

W-5—Secondary Glaucoma
Wilfred E. Fry, M.D.
Philadelphia, Pa.

Th-4—The Principles of Nonsurgical Treatment of Glaucoma
Irving H. Leopold, M.D.
Philadelphia, Pa.

Th-5—The Principles of Surgical Treatment of Glaucoma
Samuel J. Meyer, M.D.

COURSE 34

Room 781 Periods M-5, M-6

KENNETH N. OGLE, Ph.D.
Rochester, Minn.
BY INVITATION

Essential Aspects of Binocular Vision

A two-period course—$4.00

These lectures present a well-rounded review not only of the basic physiology and optics involved in normal binocular vision, but also of the existing problems. To be considered are the sensory and motor aspects of the organization of the two eyes, the basic facts of fusion, fusional movements, phorias, fixation disparity, prism vergences, stereopsis, and elements of binocular spatial localization.

COURSE 35

Room 777 Periods T-5, T-6

D. H. O'ROURKE, M.D.
Denver, Colo.

Manifest and Cycloplegic Refraction with Cross Cylinder and Astigmatic Dials

A two-period course—$4.00

This course is a practical demonstration of the use of the Jackson cross cylinder and the Lancaster astigmatic dials. Both of these methods lend themselves to the subjective examination of the eye in a simple and practical manner.

Each method may be utilized satisfactorily either with or without the use of a cycloplegic. Either method may be used nicely as a check on the other, and both methods are used at the time of the refraction interchangeably.

A minimum of theory will be used as necessary to emphasize the practical demonstration.

COURSE 36

Room 713 Periods W-5, W-6

M. S. OSHER, M.D.
Cincinnati, Ohio

A Diagnostic Approach to Squint Surgery

A two-period course—$4.00

An accurate diagnosis based on the actions of the eye muscles is an absolute necessity for good postoperative results in strabismus surgery. An easy understanding of the main actions of the extraocular muscles will facilitate such preoperative diagnosis and will also make simple a quick diagnosis of the various muscle imbalances, particularly vertical imbalances. Tests for motility, convergence, and fixation will help to determine specifically the muscle or muscles to be operated upon.

COURSE 37

Room 744 Periods M-6, T-6, W-6

R. TOWNLEY PATON, M.D.
New York, N. Y.

Corneal Surgery

A three-period course—$6.00

The first part of the course will deal with the anatomy and physiology of the cornea. Mention will be made of the success of drugs and chemicals on the regeneration of tissues.

The second portion will deal with the selection of cases.

The third lecture will deal with the operative technic and postoperative complications, and their treatment.

COURSE 38

Room 736 Periods M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5

BRITTAIN F. PAYNE, M.D., et al.
Practical Eye Pathology

An eight-period course—$16.00

M-4—Histopathology of the Eye: Introduction

Brittain F. Payne, M.D.
New York, N. Y.

This short course is histopathology of the eye is designed to emphasize common lesions found in enucleated eyes in the laboratory. A brief description of normal eyes is presented for comparison with abnormal specimens. A plan for examination of globes should follow a fixed routine, such as

1. Gross examination of the section
2. Examination of the section with the loupe
3. Low power examination with the microscope
4. High power studies with the microscope

The topics to be discussed and illustrated by projection will be

1. Inflammatory lesions of the eye, such as uveitis from systemic causes and that following operation and trauma
2. A consideration of tuberculosis, sympathetic ophthalmia and leprosy
3. The pathology of eyes lost after cataract operation
4. Glaucoma with its pathologic changes
5. Intraocular neoplasms

M-5—Pathologic Complications From Intraocular Operations

Gerald B. Kara, M.D.
New York, N. Y.

Complications following intraocular operations are best studied in the laboratory following the enucleation of the diseased eye. Fortunately very few eyes are submitted to the laboratory, due to the marked improvement in surgical procedures and treatment in the past few years.

Examination of ocular preparations in the laboratory offers valuable evidence concerning the failure of various intraocular operations. A microscopic study often shows certain technical arrors which may be corrected in future operations. In many cases, microscopic examination will determine conditions existing before the operations and account for the loss of the eye.

A review of the globes enucleated after intraocular operations at the New York Eye and Ear Infirmary revealed that loss of eyes after glaucoma surgery exceeded all other types combined. Enucleations after cataract extractions, removal of intraocular foreign bodies and retinal detachment operations followed in about that order.

A film in color will be projected to demonstrate the preparation of a microscopic section from the time of enucleation through the final diagnosis with the verbal description by the editor and producer, Dr. Kara.

T-4—Pathology of Injury of the Eye

Merrill J. Reeh, M.D.
Portland, Ore.

Because such a large number of eyes are enucleated as the result of trauma and subsequent complications, it is of extreme value to consider the numerous pathologic changes which may be encountered. The symptoms, findings, treatment and clinical history will be correlated carefully with the histopathology. Following the projection of slides and a comprehensive discussion of the subject, representative slides will be passed to the class members for study with the microscope. The presentation will not be didactic but rather a correlation between histopathology and clinical ophthalmology. Informal discussion by the class members will be encouraged.

T-5—Pathology of Tumors of the Lids and Adnexa

Merrill J. Reeh, M.D.

Tumors of the lids and adnexa are commonly encountered. Their clinical management is occasionally faulty due to improper recognition of the tumor, or to employment of incorrect or inadequate treatment. Knowledge of the clinical appearance, growth, characteristics and histopathology of these tumors must be constantly accessible to the clinician. A variety of slides representing the clinical entities and histopathology will be projected. This will be accompanied by a comprehensive discussion correlating the clinical picture and the histopathology. Following this, representative slides will be passed out to the class members for study with the microscope. Class discussion will be encouraged.

W-4—Pathology of Detachment of the Retina

Joseph A. C. Wadsworth, M.D.
New York, N. Y.

In discussing the pathology of detachment, the greater part of the time will be taken up with the usual serous type occurring as a result of a break. For simplicity the subject will be divided into three headings:

1. Detachment following trauma — that following a direct blow to the eye
2. Detachment following an intraocular tumor
3. Serous type detachment

Eyes that have been badly disorganized by perforating injuries will not be included in discussion of detachment of the retina following trauma. Such eyes are lost because of the severe damage of the inner structure of the eye and the detachment of the retina is comparatively minor damage. Eyes that have been subjected to direct trauma oftentimes develop a detachment of the retina some time later. Such cases will be discussed and an effort will be made to explain the process and pathology causing the detachment. Microscopic sections will be shown to document statements made. The importance of a detachment following trauma and a clear picture of the sequence of events that take place following such injury to the eye is of great interest from the medicolegal standpoint.

The pathology of detachment following intraocular tumor will be discussed and microscopic sections will be used to demonstrate certain important parts. The actual detachment in an eye containing an intraocular tumor is of secondary importance; however, a discussion of differential diagnosis will be made and some pathologic interpretations will be demonstrated to help explain some of the clinical findings.

W-5—Pathology of Orbital Tumors

Joseph A. C. Wadsworth, M.D.

A brief discussion of orbital tumors will be presented. Microscopic sections will be shown to document the various types of tumors selected for this presentation. An effort will be made to associate the clinical signs with the microscopic findings.

The primary object of the course is to study the histopathology of orbital tumors. However, wherever possible, clinical findings will be included in order to coordinate the pathology with the clinical manifestations.

The greatest emphasis will be placed on primary tumors of the orbit, but metastatic tumors as well as systemic diseases will be included in order to help in the differential diagnosis of orbital lesions.

There are certain orbital lesions that simulate tumors. These will be considered both clinically and microscopically.

The general outline to be followed in presenting the material for this study will include:

I. Primary Tumors of the Orbit
II. Metastatic Tumors of the Orbit
III. Systemic Diseases with Orbital Manifestations
IV. Lesions Simulating Orbital Tumors.

Th-4—Pathology of Diseases Complicated by Prominent Fibroblastic Proliferation

A. Marvin Gillman, M.D.
New York, N. Y.

A number of ocular diseases are characterized in some stage of their pathogenesis by prominent fibrovascular membrane formation. In many such states it is the membrane formation and its consequential pathology that spell ultimate loss of visual function and often beginning deterioration of the eye.

The disease state to be considered are retrolental fibroplasia, Coats's disease, Kuhnt-Junius disease, cyclitic membrane formation, and retinitis proliferans.

Though these conditions are of differing etiologies, they have in common some injurious incident, inflammatory, hemorrhagic, exudative or traumatic, which stimulates the reticulo-endothelial system in the tissues to respond with a proliferative repair process which often goes beyond the safety line for normal or near normal ocular function.

Consideration will be given to the nature, origin, development and final stage of tissue organization, (and often organ disruption), of the fibrovascular membrane formations in the specific diseases mentioned above.

Th-5—Secondary Glaucoma

Bernard A. Roberts, M.D.
New York, N. Y.

The clinicopathologic approach will be stressed in the demonstration of glaucoma as it is associated with various conditions, i.e., hydrophthalmos and buphthalmos, glaucoma capsulare, endophlebitis obliterans, essential iris atrophy, malignant melanoma, Sturge-Weber's disease, diabetes, retrolental

fibroplasia, retinal detachment, epithelial cyst of the anterior chamber, sympathetic ophthalmia.

Not only will the pathogenesis be discussed and demonstrated but rationale of therapy based on the underlying pathology will be explained.

COURSE 39

Room 777 Periods M-4, T-4

RALPH H. PINO, M.D.
Detroit, Mich.

Bifocal Lenses and Presbyopia

A two-period course—$4.00

It is the function of an optical system to guide rays of light into determined pathways. The periscope, telescope and microscope are good examples of this. The best ophthalmic lens is that which most closely adheres to this principle.

Of the several elements of basic importance in bifocal, aphakic or any strong lens, we place special emphasis on the reading point level and the placement of the optic axis in the direct line of the object to the macula. The optic centers or dots when placed on each side of a lens are nothing more or less than the ends of the optic axis. Noted on the one side only, it can be very misleading.

Any beam of light passing through a lens except through the optic axis develops aberration in direct proportion as it deviates from this axis, and increasingly with any increasing strength of the lens. It is therefore important that the optic axis be in line with as direct a pathway as possible from the macula, through the pupil, the optic axis of the lens, and the object viewed.

This course is designed to make perfectly clear the mechanics of spectacles and the physics of light essential to the best satisfactions of the patient. With these principles in mind the ophthalmologist can in turn hold manufacturers and opticians responsible in meeting the requirements of his prescriptions.

COURSE 40

Room 716 Periods M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6

HUNTER H. ROMAINE, M.D., et al.
Ocular Motility

A twelve-period course—$24.00

It is our desire to cover the subject, starting with the fundamentals and working through to surgical technics and an evaluation of all methods of treatment.

M-4—Applied Anatomy and Physiology of the Ocular Muscles

Hunter H. Romaine, M.D.
New York, N. Y.

Anatomy and physiology of the ocular muscles will be presented, bringing out the relationship of the anatomy and physiology to the pathologic situations that result from discrepancies in the motor system.

M-5—Etiologic Factors in Muscular Imbalance

Abraham Schlossman, M.D.
New York, N. Y.

Etiologic factors relating to the major causes of muscular imbalance will be discussed.

M-6—Evaluation of Tests in the Diagnosis of Motor Anomalies

Edward A. Dunlap, M.D.
New York, N. Y.

An evaluation will be made of the routine tests and diagnoses and their application.

T-4—Preoperative Orthoptic Routine and Therapy

Dorothy Parkhill
New York, N. Y.
BY INVITATION

Preoperative orthoptic routine will be outlined and also methods used when operative procedure is not contemplated.

T-5—Indications and Contraindications for Surgical Intervention

Charles N. Romaine, M.D.
Richmond, Va.

A discussion of the indications and contraindications for surgical intervention will be presented.

T-6—Round Table Discussion—Panel

W-4—Choice of Surgical Procedure

Byron Smith, M.D.
New York, N. Y.

The choice of surgical procedures and choice of individual procedures for certain situations will be discussed.

W-5—Surgical Technic

Truman L. Boyes, M.D.
New York, N. Y.

An evaluation of the various surgical technics will be made, including discussion of sutures and surgical materials.

W-6—Surgical Complications and Secondary Surgery

Hunter H. Romaine, M.D.

The complications following surgical intervention and suggestions on secondary operations will be considered.

Th-4—Analysis of Operative Results and Evaluation of Surgical Versus Nonsurgical Therapy

Richard C. Troutman, M.D.
New York, N. Y.

An analysis of operative results and an evaluation of conservative and surgical procedures will be made.

Th-5—Postoperative Orthoptic Routine and Therapy

Dorothy Parkhill

Orthoptic problems in handling the postoperative patient will be considered.

Th-6—Home Training in Orthoptics

Mrs. James Hughes
BY INVITATION
Hunter H. Romaine, M.D.

The use of home training methods in orthoptics will be presented.

COURSE 41

Room 776 Periods M-4, T-4, W-4, Th-4

C. WILBUR RUCKER, M.D.
Rochester, Minn.

Neuro-ophthalmology

A four-period course—$8.00

Practical applications of perimetry will be discussed during the first two hours and exemplified by cases of lesions at the optic radiations, the chiasm and the optic nerves. The third hour will be devoted to lesions of the third, fourth and sixth cranial nerves and to myasthenia gravis. During the fourth hour nystagmus will be reviewed, and various types illustrated by a motion picture.

COURSE 42

Room 732 Periods M-5, M-6

COURSE 43

Room 732 Periods T-5, T-6

CHARLES SCHEPENS, M.D.
Boston, Mass.
BY INVITATION

The Technic of Indirect Ophthalmoscopy: Adjunct in Diagnosis of Retinal Detachment

A two-period course—$4.00

This two-hour course is being presented twice, as Course 42 on Monday and as Course 43 on Tuesday. **Please select course number according to day on which you wish to attend.**

The optical principles of direct and indirect ophthalmoscopy and the advantages and disadvantages of both methods are briefly outlined.

A new indirect stereoscopic ophthalmoscope is described, the technic of its use is demonstrated, followed by practical exercises with the instrument. It is hoped that the new indirect ophthalmoscopes will be available for this purpose.

Points concerning ophthalmoscopy, which are of great importance in the diagnosis of retinal detachment, are discussed.

COURSE 44

Room 781 and Room 721 Periods T-4, T-5 and Periods W-4, W-5, Th-4, Th-5

ALBERT E. SLOANE, M.D.
Boston, Mass.

BERNARD C. GETTES, M.D.
Philadelphia, Pa.

ABRAHAM POLLEN, M.D.
Boston, Mass.

Refraction

A six-period course—$12.00

1. School Vision Testing: Program. Problems and Methods

This course is designed to provide the ophthalmologist with background for this important phase of public health work. In recent years increasing emphasis is being placed on such programs throughout the country, and the eye doctor is more and more being called in to act either in an advisory capacity or in the actual setting up of such procedures. Various methods of testing will be demonstrated and discussed and their present relative merits described. The problems involved in such programs other than actual testing equipment are many and important, and will be discussed.

2. Telescopic Lenses and other Subnormal Vision Aids

This course will review the subject of telescopic lenses briefly and provide the ophthalmologist with background for appreciating the value and limitations of such lenses. Such tests can be done by the average ophthalmologist and technics will be demonstrated utilizing the various types of lenses on the market today. In addition there will be shown various other aids for increasing the size of the retinal image. Many devices are available which are easily fitted and very inexpensive. The aim of this course is toward clinical application.

3. Criteria for Prescription of Prism in Ophthalmic Practice

This course is designed to set a working formula for guidance in prescribing prisms. It is well realized that the standard textbooks justifiably generalize in this phase of treatment. It must be so, since all cases must be considered individually.

Nevertheless some system of guidance is desirable and helpful even if subject to some error. The course will stress a classification of heterophoria and indicate in which cases and how much prism may be prescribed.

4. Pros and Cons of Cycloplegia in Refraction

The place of cycloplegia in refraction has always been a controversial subject. This course aims at showing the pros and the cons. The advantages and shortcomings will be openly discussed as will the indications and contraindications. The relative merits of the various cycloplegias and the best methods of administration will be considered. An attempt will be made to make this of clinical rather than theoretic value.

COURSE 45

Room 754 — Periods M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6

GEORGIANA D. THEOBALD, M.D., et al.
Histopathology

A twelve-period course—$24.00

The teaching will be by lecture, microprojection and microscopes. Before attending, a review of normal histology is recommended.

Pathology of Retrolental Fibroplasia

Frederick C. Blodi, M.D.
Iowa City, Iowa

The histologic changes in the eyes of prematurely born children with retrolental fibroplasia will be discussed on the basis of kodachromes and histologic slides.

The early changes caused by this disease are characteristic and absolutely pathognomonic. They follow a definite pattern. The first changes occur at the equator in the nerve fiber layer of the retina. Here we see small nests of endothelial cells soon associated with an increase of the glial elements. These nests become canalized and the newformed capillaries break through the internal limiting membrane into the vitreous.

Angiomatous tissue forms on the retina and in the vitreous. The retina becomes edematous and hemorrhages occur. The retina becomes folded and detached by organization and contracture of this new-formed tissue.

In some cases the whole retina will be detached and complications, such as anterior synechias and secondary glaucoma, will follow.

Nonspecific Uveitis

Leonard Christensen, M.D.
Portland, Ore.

Uveitis is an inflammatory reaction of the uveal tract and differs from inflammation elsewhere by the peculiarities of the environment in which it takes place. A brief discussion of the pathogenesis of inflammation will be given along with the sequelae and complications that develop in nongranulomatous uveitis.

Pathology of the Optic Nerve

Windsor S. Davies, M.D.
Detroit, Mich.

Various lesions of the optic nerve will be discussed from the histopathologic standpoint. A correlation will be made between the clinical and pathologic findings.

Pathology of Corneal and Scleral Disease

Levon K. Garron, M.D.
Oakland, Calif.

The pathology of common corneal lesions will be discussed. The healing of penetrating and perforating corneal wounds will be presented together with a discussion of complications. Keratitis, corneal ulceration and their various sequelae will be shown and discussed. A few of the more common degenerative corneal lesions will also be considered. Episcleritis, scleritis, as well as injuries and degeneration of the sclera, will be reviewed.

Pathology of the Choroid and Macular Diseases

Michael J. Hogan, M.D.
San Francisco, Calif.

Pathologic changes in the choroid, excluding neoplasms, will be discussed. The development of specific and nonspecific inflammatory diseases will be presented, including the sequelae. The effects of trauma on the choroid will be discussed. Various circulatory and degenerative lesions will be demonstrated to show the effects on both the choroid and the retina. Hereditary and senile macular degenerative lesions will be depicted.

Pathology of the Lens

Michael J. Hogan, M.D.

The purpose of this lecture will be to present the normal histology of the lens and the methods by which a number of diseases and agents result in the development of cataractous changes. The histopathology will be discussed in detail, giving the changes in the lens capsules, lens epithelium, and the lens fibers. Senile cataract in its various manifestations will be discussed from a clinical and pathologic standpoint. Cataracta complicata of the posterior and anterior types will be demonstrated. Diabetic and metabolic cataracts will be discussed.

Hypertensive, Renal, Diabetic and Arteriosclerotic Retinopathy

A. Ray Irvine, Jr., M.D.
Beverly Hills, Calif.

Celloidin sections of eyes showing the typical changes of hypertensive, renal, diabetic and arteriosclerotic retinopathy will be presented for microscopic study. Where possible, newer stains demonstrating mucoproteins and fixed polysaccharides will be used. The lecture will consist of an explanation of the slide material as well as a discussion of the pertinent pathologic physiology.

Granulomatous Uveitis

John S. McGavic, M.D.
Bryn Mawr, Pa.

Sympathetic ophthalmia and tuberculosis are both granulomatous diseases. Sympathetic ophthalmia is always bilateral and tuberculosis frequently is. Histopathologic differentiation is possible; it requires accurate knoweldge of cellular detail; differentiation of the two diseases is good exercise.

Sympathetic ophthalmia represents an infiltrative type of inflammation while tuberculosis is destructive. Tuberculosis tends to have a spotty distribution while sympathetic uveitis is widespread. The granulomatous lesions (tubercles) in the two diseases are also different on histopathologic examination.

Tumors of the Retina

Edith M. Parkhill, M.D.
Rochester, Minn.
BY INVITATION

The gross and microscopic pathology of retinoblastoma will be presented with the aid of lantern slides. Factors in etiology and prognosis will be considered. On classifying the cases according to certain factors in the history and microscopic findings, one group appears in which the survival rate is almost 100 per cent.

Pathology of Glaucoma

Theodore E. Sanders, M.D.
St. Louis, Mo.

The essential changes produced in the tissues of the eye by increased intraocular pressure will be studied. The various lesions causing secondary glaucoma will also be described. The possible mechanisms which cause both primary and secondary glaucoma will be discussed.

Cells Found in Inflammatory Lesions

Georgiana D. Theobald, M.D.
Oak Park, Ill.

A discussion of cytology, pathology and sequelae of ocular inflammations, in general, will be presented.

Ocular Melanomas

Helenor Campbell Wilder, M.D.
Washington, D. C.

The histopathology of ocular melanomas will be demonstrated by lantern and microscopic slides. Classifications according to cell type, argyrophil fiber content and pigment content will be discussed in detail and correlated with statistical studies of clinical behavior. Theories of histogenesis will be given brief consideration.

COURSE 46

Rooms 788 & 789 — Periods M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6

HARVEY E. THORPE, M.D.
Pittsburgh, Pa.
ROBERT J. MASTERS, M.D.
Indianapolis, Ind.
ALEXANDER A. KRIEGER, M.D.
Pittsburgh, Pa.
JOHN MELVIN MASTERS, M.D.
Indianapolis, Ind.
SAMUEL N. KEY, JR., M.D.
Austin, Texas

Slit Lamp Biomicroscopy

A twelve-period course—$24.00

This course, which has been presented every year since 1936, was originally planned as an elementary course for those who had used the slit lamp biomicroscope very little or not at all. Much time was given to making the registrants familiar with the manipulation of the instruments. The illustrated lectures, which described biomicroscopic studies of the normal and pathologic cornea, anterior chamber, iris, crystalline lens and vitreous humor, were essentially elementary. However, the more thorough training of ophthalmologists during the past several years has definitely changed the needs of those who register for this course, and the instructors who present it have correspondingly changed its curriculum.

The illustrated lectures have been made more comprehensive, as they cover the original subjects of cornea, anterior chamber, crystalline lens and vitreous humor. There are added lectures on methods of illumination, study of the conjunctiva, slit lamp gonioscopy and study of the deep vitreous humor and eyeground. In the demonstration room we have been privileged to show the new instruments which are being manufactured overseas. The technic of examining the anterior chamber angle, deep vitreous and eyeground is demonstrated daily. Incidentally, the perennially intriguing observation of corneal endothelium in specular reflection is still receiving its share of attention.

Beginners are still as welcome as ever in this course! Some of the teaching group get great satisfaction from guiding the novice through his first steps in the use of this indispensable instrument, and it has been our experience that almost every beginner has developed satisfactory proficiency before our working time is completed.

COURSE 47

Room 706 — Periods T-4, W-4

HARVEY E. THORPE, M.D.
Pittsburgh, Pa.

Surgery of Intraocular Foreign Bodies

A two-period course—$4.00

This course proposes a comprehensive survey of old established and also newly developed technics for the removal of foreign bodies from the eyeball.

Magnetic and nonmagnetic intraocular foreign bodies create special surgical problems. Accurate determination of functional and anatomic damage is important. Methods of evaluation of extent of trauma to ocular tissues and of impairment of vision will be analyzed.

Localization of foreign bodies by x-ray methods must be accurate for successful surgery. The electroinductive locator is a distinct help in foreign body localization both before and during operation. Several methods of localization, both by x-ray and by electroinductive technic, will be described and elaborated in this course.

The surgical technic of removal of foreign bodies must be properly planned from incision to closure. Technics for removal of foreign bodies from the anterior chamber, iris, lens, ciliary body, vitreous, and retina will be reviewed.

It is also proposed to discuss the management of associated complications, such as, laceration, uveal and vitreous prolapse, traumatic cataract, retinal detachment and infection. A review of preoperative and postoperative care will be included.

COURSE 48

Room 702 — Periods M-5, M-6, T-5, T-6, W-5, W-6

MAYNARD C. WHEELER, M.D.
PHILIP KNAPP, M.D.
New York, N. Y.

Concomitant Strabismus: Diagnosis and Treatment

A six-period course—$12.00

The practical handling of concomitant strabismus will be fully discussed. This will include methods of examination, measurement of the deviation, diagnosis and sensorial evaluation of convergent and divergent strabismus. The medical treatment, the indications for surgery, the choice of operation and the postoperative treatment will be considered in detail.

COURSE 49

Room 786 Periods M-4, T-4, W-4

MEYER WIENER, M.D.
Coronado, Calif.

Practical Points in Surgery

A three-period course—$6.00

There are many details in performance of eye surgery which the eye surgeon is inclined to overlook. These, if heeded, may mark the difference between a satisfactory and a disappointing result. These seemingly unimportant minutiae, actually of intrinsic and substantive value, have been gleaned from a sizable mass of material experienced by the author in his long surgical practice and tendered in the hope that some of the younger men may profit through his actual observation.

INDIVIDUAL COURSES — OPHTHALMOLOGY

COURSE 201

Room 740 Period M-4 or T-4

C. KNIGHT ALDRICH, M.D.
Minneapolis, Minn.
BY INVITATION

Psychosomatic Medicine in Practice of Ophthalmology and Otolaryngology: Application of Principles

The basic principles of psychosomatic disturbances will be discussed, with particular reference to those encountered by the ophthalmologist or otolaryngoloist.

Characteristic emotional reactions to blindness, deafness and tonsillectomy will be outlined. Concepts of prevention and treatment will be touched on, as well as problems of psychiatric referral.

COURSE 202

Room 734 Period M-4 or T-4

MOACYR E. ALVARO, M.D.
Sao Paulo, Brazil

Uveitis: Etiology and Treatment

The various types of uveitis will be discussed, but chronic endogenous uveitis of the granulomatous and nongranulomatous type will be dealt with in greater detail.

The clinical diagnosis of uveitis is always easy, but it is not always possible to find out from the ocular symptoms whether the uveitis is of the granulomatous type or not, in spite of the fact that there are definite clinical symptoms for each of these types. The subjective and objective symptoms of both types of uveitis will be discussed.

COURSE 203

Room 734 Period W-4 or Th-4

BENNETT Y. ALVIS, M.D.
St. Louis, Mo.

End Results of Various Types of Cataract Wound Closure

Proper closure of the cataract wound demands exact approximation of the wound margins and security against reopening. The factors involved are the type of incision, sutures, conjunctival flap, and iridectomy or iridotomy. The discussion will touch on these points:

Position, extent, bevel, manner of making

Sutures

Conjunctival, scleroconjunctival, corneoscleral over the surface, through lips of wound, preplaced, postplaced

Devices for sealing the wound

Conjunctival flap: limbal based; fornix based

Advantages and disadvantages of each fibrin coagulum

Iridectomy or iridotomy: radical or peripheral; purpose, number and position

Effects of these various features of wound closure on clinical results will be discussed.

COURSE 204

Room 740 Period W-4 or Th-4

MARIO AMENABAR, M.D.
Santiago, Chile
BY INVITATION

Retinal Detachment: Localization and Closure of Holes

To localize the tear, a specially devised Transilluminator is applied during the operation in the correspondent sector of sclera; and when the hole is transilluminated, another instrument fixes the luminous end of the localizer, leaving a clear mark on the sclera that corresponds exactly to the situation of the tear.

Diathermy is used only when the operator knows exactly where the tear is situated and can thus be limited to the surrounding retinal area, with a minimum of coagulation.

To close the tear the scleral area of the hole is treated with a small ball electrode, making indepndent applications that are not strong enough to close the tear and are reinforced by very fine penetrating applications until the hole has been surrounded by them. These intrascleral applications will not perforate the retina. They aid in evacuating the subretinal fluid, checking the situation of the tear, and efficiently closing the retinal hole.

Two new instruments will be exhibited: the retinal hole localizer and the Scleral-Marker.

COURSE 205

Room 731 Period M-6 or T-6

WALTER S. ATKINSON, M.D.
Watertown, N. Y.

Safety Measures in Cataract Surgery

Avoidable accidents will be discussed, emphasizing preventative measures in the preparation of the patient, preanesthetic medication, and anesthesia. Practice methods will be described for the introduction of sutures, the improvement of intracapsular technic and the use of instruments.

COURSE 206

Room 731 Period M-4 or T-4

GEORGE S. BAKER, M.D.
Rochester, Minn.
BY INVITATION

Neuralgias of the Head: A Clinical Review

The term "neuralgia" has been in clinical usage for centuries. By definition neuralgia is a sharp, intermittent pain in the distribution of a given nerve without apparent cause. Our conception may change a bit during modern times when a careful neurologic or anatomic study of the case leads one to suspect that the neuralgia may be produced by some organic lesion; namely, inflammatory, metabolic, vascular, toxic or structural defect. It is true that such causes as aneurysms, localized infections and tumors have been repeatedly described as the etiologic factor in one or the other forms of major tic douloureux. Sometimes by way of an introspective psychiatric evaluation ample reasons for the so-called idiopathic pain seem well established. Whenever the cause is clear to the physician, the treatment is obviously more successful for the patient.

The differential diagnosis and the neurosurgical treatment of the major and minor neuralgias of the head will be demonstrated from a clinical point of view. Specially prepared lantern slides and colored motion pictures will be used to emphasize the close relationship of these conditions to diseases of the eye, ear, nose and throat.

COURSE 207

Room 732 Period Th-5

OTTO BARKAN, M.D.
San Francisco, Calif.

Congenital Glaucoma: Diagnosis and Treatment

Corneal cloudiness, lacrimation or blepharospasm should lead to the suspicion of glaucoma even though no enlargement of the eye has occurred. In view of the urgency of early operation, the tension should be tested with a tonometer with the patient well relaxed under ether anesthesia (mid second plane) at the moment the tension is taken. Once the diagnosis is established, goniotomy with the contact glass should be performed immediately or, if delayed, 5 per cent prostigmine should be instilled every three hours. The surgical treatment of congenital glaucoma is reviewed and the present simplified technic of goniotomy is described.

COURSE 208

Room 726 Period W-6
or or
Room 734 Period Th-5

JOHN G. BELLOWS, M.D.
Chicago, Ill.

Cataract

From the time of birth until death, the crystalline lens undergoes continuous alter-

ations. The physical, chemical, and histologic changes that take place in the crystalline lens are followed from infancy to senility. The biomicroscopic appearances from birth to an advanced age are then described. Finally, the senile lens opacities are depicted from the incipient forms up to the fully developed stages of senile cataracts.

COURSE 209

Room 738 Period M-6 or T-6

CONRAD BERENS, M.D.
New York, N. Y.

Cyclodiathermy, Iridencleisis, Cyclodialysis

A national and international survey has been undertaken to evaluate cyclodialysis, iridencleisis, cyclodiathermy and cycloelectrolysis for various types of glaucoma.

The indications and contraindications will be reviewed for each procedure, and the statistical results will be evaluated. The complications following each technic will be discussed.

COURSE 210

Room 728 Period M-4 or T-4

RAYNOLD N. BERKE, M.D.
Hackensack, N. J.

Surgery of Oblique Muscles

Every vertical extraocular muscle anomaly is associated with dysfunction of one or more of the oblique muscles. For example, if the right superior rectus or the left superior oblique is paretic, the left inferior oblique overacts. If the right inferior rectus or the left inferior oblique muscle is paretic, the left superior oblique overacts. The same may be said for the muscles of the opposite eye. Thus it is obvious that in every case of paresis of one or more of the vertically acting extraocular muscles, one or more of the oblique muscles must be overacting.

For this reason, 90 per cent of all cases of hypertropia can be corrected or greatly benefited by a procedure designed to weaken the overactive oblique muscles.

Operations designed to enhance the lifting power of a paretic vertically acting muscle should be avoided as a primary procedure in all except the most pronounced cases of hypertropia because (1) it is often impossible to positively identify the paretic muscle and (2) resection or tucking of a paretic muscle results in only temporary correction unless the direct antagonist or the yoke muscle is weakened at the same time.

Operations on the oblique muscles rather than the vertically acting muscles are to be preferred wherever possible because of the tendency of the latter operations to change the width of the palpebral fissure.

These principles will be illustrated by means of lantern slides and motion pictures.

COURSE 211

Room 705 Period W-4 or Th-4

JEROME W. BETTMAN, M.D.
San Francisco, Calif.

Value of Goniotomies

Goniotomy is one of the great surgical advances in modern ophthalmology. It has already saved many from a life of total blindness.

Evidence will be presented to demonstrate that goniotomy is the procedure of choice in congenital glaucoma and the mode of action will be explained.

The diagnosis, differential diagnosis, and prognosis of congenital glaucoma will be reviewed. Each of the modern technics of goniotomy will be presented. The merits of each will be compared and the preoperative and postoperative care will be considered.

COURSE 212

Room 706 Period M-6 or W-6

TRUMAN L. BOYES, M.D.
New York, N. Y.

Problems in Eye Surgery with Questions and Answers

All ophthalmologists have surgical problems. Each member of the conference is invited to submit one of his problems in writing at the time of the conference, and an attempt will be made to answer these questions with definiteness and celerity.

An opportunity will be afforded anyone who may wish to contribute his experience in solving these problems to insure a good cross section of opinions from men of experience.

COURSE 213

Room 705 Period M-6 or T-6

EDWARD P. BURCH, M.D.
St. Paul, Minn.

Psychosomatic Medicine in Ophthalmology

This course is concerned with the etiology, recognition, symptomatology and clinical management of various psychosomatic disorders which involve the visual apparatus. Special stress will be placed on the office management of psychosomatic disorders by the ophthalmologist, and an effort will be made to single out those disorders which experience has shown should be handled by the specialist in psychological medicine.

COURSE 214

Room 778 Period T-4

COL. VICTOR A. BYRNES (MC)
Randolph Field, Texas

Adjuncts in Teaching Ophthalmology

The most successful instructional period in ophthalmology is the one which leaves the greatest amount of useful knowledge in possession of the student upon its completion. Many factors enter into the amount of information which can be imparted. The design of the classroom, the facilities provided in the classroom, the types of instructional aids used, including printed material, partially completed outlines, photographic material on slides or motion picture films, charts, drawings, tridimensional models, and blackboard drawings are all important. Combinations of these instructional aids are more effective than the use of a single type. There are errors in the use of these aids which will nullify their otherwise valuable effect. These points will be individually discussed and examples of each type will be demonstrated.

Other items to be discussed are: types of blackboards with suggestions for their use, the use of slides, type and size of lettering, proportions of graphs, use of color, relationship of data to practical applications and forms in which data may be presented.

COURSE 215

Room 733 Period M-6 or T-6

F. PHINIZY CALHOUN, JR., M.D.
Atlanta, Ga.

Dystrophies and Degenerations of the Cornea

The more common conditions under this heading will be grouped according to the underlying pathologic process and the site of origin in the cornea in the light of our present knowledge. This approach helps to avoid prevalent confusion in terminology and simplifies the clinical recognition of each condition by more closely correlating the clinical findings with the underlying pathologic process.

The course will be illustrated with lantern slides and will include a discussion of present day methods of therapy in these conditions.

COURSE 216

Room 733 Period W-4 or Th-4

J. V. CASSADY, M.D.
South Bend, Ind.

Dacryocystitis of Infancy

Dacryocystitis is found in 5 per cent of small infants. It results from the persistence of a membrane over the lower end of the lacrimal duct obstructing tears from entering the nose. A study of the development anatomy of the lacrimal passageways in embryo, fetus and stillborn infants explains the frequency of dacryocystitis in infants and also somewhat that of adults. The treatment used in infants is to establish early a duct that is patent into the nose. The simplicity of early washing and, if necessary, probing the duct attests to its desirability and usefulness as an office procedure and the treatment of choice for dacryocystitis of infancy.

COURSE 217

Room 727 Period M-4 or T-4

ROBERT R. CHACE, M.D.
New York, N. Y.

Ocular Malingering

Ocular malingering will be considered in detail and its differentiation from hysteria and from organic disease is emphasized. A large series of graded tests for malingering will be discussed, the tests varying from simple ones that can be done with regular

Lectures and Free Demonstrations

HAROLD F. FALLS, M.D.
Ann Arbor, Mich.

THE EMBRYOLOGY OF THE EYE

Motion Picture with Sound

Monday, October 12
2:00 p.m., Room 14

W. H. HOLLINSHEAD, Ph.D.
Rochester, Minn.

ANATOMY OF THE ORBIT

Monday, October 12
3:15 p.m., Room 14

refraction equipment to more elaborate ones involving special appartus. The lecture will be illustrated by lantern slides and demonstrations of tests. Sufficient time is allowed to permit the class to inspect the tests and to experiment with the test material.

COURSE 218

Room 743 Period M-4 or T-4

WEBB P. CHAMBERLAIN, JR., M.D.
Cleveland, Ohio

Vertical Motor Anomalies

The surgical anatomy and physiology of the vertical muscles will be discussed and emphasis will be placed on the importance of careful analysis in the cardinal positions of gaze. The objective methods of testing will be stressed, including properly executed excursions, measurements with prisms and the head tilt test. Motion pictures will be used to demonstrate diagnostic procedures and to illustrate various anomalies of the vertically acting muscles.

COURSE 219

Room 778 Period W-5

MAX CHAMLIN, M.D.
New York, N. Y.

Perimeter: Types and Technics

This lecture will show technic for detection of minimal defects in visual fields caused by early lesions in visual pathways. Cases where the perimeter entirely supersedes the tangent screen in importance will be demonstrated. Choice of test objects and methods of recording the defective field will be presented. Mounting of test objects on permanent carriers wil be shown. A new instrument will be demonstrated. This is a combination perimeter and chin rest for tangent screen study. The perimeter has a fixed light source, affording equal illumination to either side of the vertical meridian.

COURSE 220

Room 724 Period M-6 or T-6

PAUL A. CHANDLER, M.D.
Boston, Mass.

Cataract Surgery: Secondary Procedures

Secondary glaucoma in aphakia may be primary glaucoma, but is usually secondary, due to pupillary block, epithelization of the anterior chamber, or peripheral anterior synechias. Peripheral anterior synechias are brought about chiefly by the complications of delayed reformation of the anterior chamber, incarceration of iris or lens capsule in the wound, prolapse of iris and vitreous loss. Emphasis is placed on measures designed to prevent these complications which lead to glaucoma, and the treatment of the glaucoma is discussed from a medical and surgical standpoint.

COURSE 221

Room 743 Period W-6

LOUIS S. CHOLDEN, M.D.
Topeka, Kan.
BY INVITATION

Psychiatric Aspects of Informing the Patient of Blindness

This lecture will consist of a discussion of the (1) psychological meanings of blindness to the patient, (2) psychological meanings of blindness to the ophthalmologist, (3) various methods of informing the patient of his

blindness and their effects on the adjustment and rehabilitation process, and (4) some aspects of predicting and evaluating the patient's reaction to the news of blindness.

Some of the secondary areas which are involved in informing the patient of blindness will be discussed. These will include problems of suicide and depression, as well as some ways of using family, friends and agencies for the blind in working with the newly blinded patient.

COURSE 222

Room 705 Period M-4 or T-4

PAUL L. CUSICK, M.D.
Detroit, Mich.

Ptosis: Differential Diagnosis and Treatment

A brief review of etiology along with a classification of blepharoptosis will be given. Various types and preferred surgical treatment will be illustrated with lantern slides. A motion picture will be shown which illustrates the difficulties encountered in Blaskovicz' operation. Means of avoiding these difficulties and simplifying the operation will be illustrated.

COURSE 223

Room 795 Period M-6 or T-6

NORMAN L. CUTLER, M.D.
Wilmington, Del.

Selection and Variety of Procedures Used in Enucleation

There are now three general types of procedures used in enucleation: buried and not mobile, mobile buried, and semiburied or integrated.

The proper selection of the procedure to be used in enucleation depends on the experiences of the operator, the type of patient and his availablity for postoperative follow-up. It is the surgeon's obligation to be familiar with the different types of implants, their advantages and disadvantages, and to give the patient the best cosmetic result possible.

COURSE 224

Room 750 Period M-4 or T-4

A. GERARD DeVOE, M.D.
New York, N. Y.

Corneal Dystrophies

A review will be made of corneal dystrophies in the light of current knowledge. In addition to diagnosis, classification, and study of the local pathology, attention will be paid to treatment.

COURSE 225

Room 705 Period M-5 or T-5

EDWARD A. DUNLAP, M.D.
New York, N. Y.

Divergence Anomalies

These anomalies consist of divergence excess and divergence insufficiency. Both are characterized by certain specific findings that serve clearly to differentiate them from anomalies of convergence. Their location in the general classification of imbalances and statistics on their relative occurrence will be given.

Symptoms of each type will be listed, and the method of diagnosis will be discussed. Typical case measurements and pictures of each type will be shown.

Treatment, both conservative and surgical, will be outlined, and tabulated results of studies on over one hundred surgically treated cases of divergence excess will be presented.

COURSE 226

Room 17 Period M-4

JOHN H. DUNNINGTON, M.D.
New York, N. Y.

End Results in Eye Muscle Surgery

The end results in the surgical treatment of esotropia will be discussed with particular emphasis being placed upon the causes of failure. The preoperative findings as they influence the selection of the surgical procedures will be considered and attention will be given to some important details in operative technic.

COURSE 227

Room 712 Period M-4 or T-4

JOHN A. EGAN, M.D.
Denver, Colo.

Cross Cylinder Application and Theory

This course will include a description of the use of the cross cylinder as taught by Edward Jackson. Improved models will be shown and additional uses, since Jackson's time, will be described.

Lantern slides will be shown exhibiting its practical application. Large 2-foot models of cross cylinder, trial cylinder and trial frame will be used to demonstrate general technic in refraction. Twelve different uses of the instrument, including the employment of the newer correcting cross cylinder, will be described.

A brief discussion of theories involved, controversial aspects and merit in astigmatism as opposed to other methods will be presented.

COURSE 228

Room 721 Period M-6

HAROLD F. FALLS, M.D.
Ann Arbor, Mich.

Ocular Geriatrics

A comprehensive survey of the ocular changes and disease states associated with senescence will be presented. When possible, a differentiation will be made between universally occurring disease states in the aged eye and those disease processes appearing in senescence but having no direct relationship to the passage of time.

Treatment, care, and management of the senile eye and individual will receive consideration.

COURSE 229

Room 721 Period T-4

HAROLD F. FALLS, M.D.
Ann Arbor, Mich.

Practical Application of Heredity

The purpose of this course is to present the principles of heredity so that they may be employed by the clinical ophthalmologist in his daily practice. When possible, diseases having hereditary background will be illustrated and discussed. A demonstration of pedigree taking and interpretation will be presented.

COURSE 230

Room 17 Period M-5

F. BRUCE FRALICK, M.D.
Ann Arbor, Mich.

Surgical Anatomy of Operations for Glaucoma

It is essential to any ophthalmic surgeon in performing the various surgical procedures on the globe to have an understanding of the anatomy of the eye. Familiarity with normal relationships gives confidence when corrective operations are undertaken in complicated cases. A knowledge of anatomy also includes an understanding of the variations from the normal and the effect these variations play in the functioning of the part. The surgical aspects of glaucoma therapy, therefore, require that the operator possess sufficient ocular anatomical insight to permit him to establish adequate drainage of aqueous to compensate for the known pathologic changes which have disturbed the normal physiology of aqueous exchange.

COURSE 232

Room 733 Period W-5 or Th-5

BERNARD FREAD, M.D.
New York, N. Y.

Ideal Refraction Equipment: Survey of Instruments Used

Refraction is most important in the daily routine of every ophthalmologist. A good part of each working day is spent with details of refraction and not enough emphasis has been placed upon the tools necessary to make refraction easier, more accurate, and less time-consuming.

Every major refraction instrument manufactured in the United States and in the larger optical plants of England, France, Germany, Italy, Japan and Switzerland will be discussed. Well over one hundred lantern slides will graphically display this equipment.

Attention will be given not only to elementary equipment used by the beginner but also to elaborate devices used for the objective and subjective measurement of refraction of particular interest to the experienced ophthalmologist.

The lecture will include the names and functions of various instruments and their manufacturers as well as the current cost.

COURSE 233

Room 727 Period M-5 or T-5

WILFRED E. FRY, M.D.
Philadelphia, Pa.

Inflammatory and Degenerative Lesions at the Posterior Pole of the Eye: Differential Diagnosis

The differential diagnosis of inflammatory and degenerative lesions not only must be made between these two conditions but they must also be distinguished from malignancy. In malignant conditions the diagnosis is on a different basis than when the malignancy is in the midzone or in the anterior segment of the eye. When in the midzone or anterior segment, distinction must be made between a serous and a solid detachment. When the lesions are in the posterior segment the diagnosis must be made upon the ophthalmoscopic appearance plus all other information that can be afforded by a complete examination of the patient.

The situation is different when the macula alone is involved, and when the region of the disc is involved.

Types of lesions as they involve the macula and the perioptic region will be illustrated and the management discussed.

COURSE 234

Room 722 Period M-6 or T-6

WATSON W. GAILEY, M.D.
Bloomington, Ill.

Cataract Surgery: Management of Complications

This discussion concerning the management of complications of cataract surgery will deal not only with the postoperative complications but also with those presenting themselves prior to and during the performance of cataract extraction.

Preoperative complications must be considered. Suspicions that definite postoperative complications might arise deserve careful thought.

COURSE 235

Room 752 Period M-6 or T-6

J. CONRAD GEMEROY, M.D.
Detroit, Mich.

External Diseases of the Eye

This lecture on external eye diseases is illustrated with kodachrome slides to show the usual, as well as some unusual, diseases of the lids, conjunctiva, and cornea with discussion of their diagnosis and treatment. These illustrations will be projected stereoscopically in color on the screen.

COURSE 236

Room 740 Period M-6 or T-6

GLEN G. GIBSON, M.D.
Philadelphia, Pa.

The Retinopathies: Differential Diagnosis

There is a variety of systemic diseases which produce disturbances in the retinal blood vessels, the retina, and the optic nerve. They are characterized by the presence of hemorrhages, edema, vascular exudates, and other lesions. When such a combination of findings is encountered the ophthalmologist frequently has an important and difficult differential diagnostic task to determine the cause of this retinopathy. There are numerous clinical features about these various retinopathies by which a diagnosis of the causative systemic disease may be recognized. This discussion will be based on the general principles of differential diagnosis of neuroretinopathy as they occur in photographs of the fundus.

COURSE 237

Room 726 Period W-4 or Th-4

HAROLD GIFFORD, M.D.
Omaha, Neb.

Dacryocystorhinostomy

This course will present a review of the common surgical technic used in tear sac surgery. The surgical anatomy of the region will be covered. The technic of transplantation of the tear sac will be described in detail with lantern slides and motion pictures.

COURSE 238

Room 776 Period M-5 or T-5

JOHN F. GIPNER, M.D.
Rochester, N. Y.

Recent Advances in Ophthalmology

Recent advances in ophthalmic surgery including congenital cataract surgery, round

pupil cataract extraction, glaucoma surgery, and implants following enucleation or evisceration will be discussed. Mention will be made of recent advances in therapeutics.

COURSE 239

Room 740 Period W-5 or Th-5

ISADORE GIVNER, M.D.
New York, N. Y.

Associated Skin and Eye Manifestations of Systemic Disease

The appearance of lesions in both the skin and eye as manifestations of general disease makes it important to be familiar with the expressions in both systems for the better recognition and handling of systemic disorders. Among the diseases with representations in both systems, the following will be elaborated upon:

I. Phakomatoses — Bourneville's disease, Recklinghausen's, Sturge-Weber.
II. Collagen diseases—acute disseminated lupus erythematosus, dermatomyositis, scleroderma and periarteritis nodosa.
III. Amino acid and vitamin deficiencies.
IV. Granulomatous diseases — brucellosis, sarcoid, coccidiomycosis.
V. Viral diseases—Kaposi's varicelliform dermatitis, measles, herpes zoster, vaccinia, variola, lymphogranuloma venereum.
VI. Miscellaneous — ocular-mucous membrane syndrome of erythema multiforme, Vogt-Koyanagi, atopic dermatitis, pseudoxanthoma elasticum, and xeroderma pigmentosum.

COURSE 240

Room 776 Period M-6 or T-6

EVERETT L. GOAR, M.D.
Houston, Texas

Complications of Cataract Surgery

The best way to treat complications is to prevent them. To that end a careful preoperative examination must be made, and the type and time of operation decided upon. The surgeon must always be ready to change his plan if it seems advisable. The complications during and after operation will be discussed as well as methods of avoiding them.

COURSE 241

Room 778 Period W-4 or Th-4

ORVILLE GORDON, M.D.
Chicago, Ill.

Surgical Importance of the Orbital Fascia

The orbital fascia is one integrated structure whose component parts are intimately connected and whose functions are interrelated. The fascia is alsophysically connected to the eye and the extraocular muscles. In any extraocular surgical procedure, the fascia is a potent factor.

The fascia will be demonstrated by means of drawings and slides. The important surgical considerations of each part will be indicated.

COURSE 242

Room 750 Period M-5 or T-5

RAYMOND J. GRAY, M.D.
Pittsburgh, Pa.

Intraocular Foreign Bodies

The subject of intraocular foreign bodies is dealt with mainly from the standpoint of diagnosis, localization and extraction. Special emphasis is placed upon the management of the nonmagnetic type.

COURSE 243

Room 750 Period M-6 or T-6

GEORGE M. HAIK, M.D.
New Orleans, La.

Beta Irradiation

This lecture will cover the advantages and disadvantages of the Iliff applicator in vascularization of the cornea, with particular reference to recurrent pterygium and the experimental effect of the Iliff applicator on the ciliary body of the rabbit's eye, in an attempt to simulate the effect of cyclodiathermy.

COURSE 244

Room 786 Period W-5 or Th-5

S. ALBERT HANSER, M.D.
St. Louis, Mo.

Studies in Ocular Allergy

This lecture will include methods used in testing for allergies as follows: history, provocative tests, conjunctival tests, patch tests, skin tests, injection tests with particular emphasis on diagnostic conjunctival scrape smear with methods of preparing the slide and examination of the slide. Treatment of chronic allergic conjunctivitis will be discussed. Also, treatment of chronic recurrent marginal conjunctivitis, phlyctenular keratoconjunctivitis, vernal conjunctivitis and a short discussion of diagnostic anterior chamber puncture will be presented.

COURSE 245

Room 781 Period M-4

ROBISON D. HARLEY, M.D.
Atlantic City, N. J.

Lesions of the Third, Fourth and Sixth Cranial Nerves: Topical Diagnosis

Topical diagnosis of lesions of the third, fourth and sixth cranial nerves requires a systematic consideration of the orbit, cavernous sinus, base of the brain, brain stem, nucleus and supranuclear connections. The course is designed especially for the practicing ophthalmologist in the differential diagnosis of various motor anomalies of the eye and the associated signs. A minimum of anatomy will be reviewed to describe various syndromes as they occur in this clinical approach to the subject. Short case histories will be utilized for illustration of important signs and symptoms.

COURSE 246

Room 778 Period M-5 or T-5

HAROLD L. HARRIS, M.D.
Evanston, Ill.
BY INVITATION

Anesthetic Agents and Technics for Ophthalmological Surgery

The material to be discussed will cover the various anesthetic agents and methods useful in general anesthesia for ophthalmological surgery together with the indications and cautions. Positive measures will be presented to avoid respiratory difficulties such as cough, laryngospasm, and other obstructions. Detailed procedures will be described for anesthetizing infants, small children, and adults for all of the various surgical procedures in ophthalmology. These procedures will describe premedication, induction agents and methods, endotracheal intubation, maintenance of anesthesia, and finally management of the recovery period.

There will be discussion of the proper uses of pentothal sodium and a critical evaluation of its abuses.

COURSE 247

Room 727 Period M-6

MICHAEL J. HOGAN, M.D.
San Francisco, Calif.

Lesions of the Choroid: Their Pathologic Significance

Correlation of the histopathologic changes and the clinical findings will be made in a series of patients with macular lesions. These lesions include senile macular degeneration, disciform degeneration, hereditary macular degeneration and angioid streaks. Clinical and pathologic evaluation of a number of other choroidal diseases will be presented; among these diseases are melanomas and specific inflammations.

COURSE 248

Room 17 Period M-6

WENDELL L. HUGHES, M.D.
Hempstead, L. I., N. Y.

Ophthalmic Plastic Surgery: Minor Procedures

The discussion will include repair of lacerations (recent and old), ectropion, entropion, trichiasis, pterygium and pseudopterygium.

COURSE 249

Room 705 Period W-5 or Th-5

FRED W. JOBE
Rochester, N. Y.
BY INVITATION

Refraction: Basic Problems with Questions and Answers

The science of refraction has had a steady growth. In the beginning all that was done was to correct presbyopia. From that beginning there came a realization of the need for correcting hypermetropia, then myopia and finally, through the work of the astronomer Airy, the correction of astigmatism. The correction of the spherical and astigmatic errors completed the refractive work necessary for monocular vision.

Much later came the recognition that comfortable efficient vision was related to binocularity. The discussion in this course will center around the need for binocular vision and the tests that can be used.

COURSE 250

Room 784 Period M-4 or T-4

HAROLD H. JOY, M.D.
Syracuse, N. Y.

Role of Angiography in Ophthalmology

The presence of an unexplained visual defect should always suggest the possibility of an intracranial lesion. Since not only vision but life itself may be at stake, early diagnosis is essential. In such cases angiography will frequently demonstrate the location and the character of the lesion before any other measure.

The object of this course is to familiarize ophthalmologists with this important diagnostic procedure. After a review of the normal anatomy of the arteries and visual pathways at the base of the brain, the principles of angiography as related to ophthalmology will be discussed. This will be followed by the projection of angiograms accompanied by case reports demonstrating the diagnosis of intracranial lesions affecting the chiasm and optic nerves.

COURSE 251

Room 776 Period W-5 or Th-5

DEWEY KATZ, M.D.
Hartford, Conn.

Corneal Dystrophies

The subject will be discussed in the light of recent contributions. Emphasis will be directed toward factors of clinical importance and to the dystrophies which have been given special study by the author and which have been the subjects of reports.

COURSE 252

Room 776 Period W-6 or Th-6

BERTHA A. KLIEN, M.D.
Chicago, Ill.

Clinical Pathology of Retinal Lesions

The clinical manifestations of a diseased retina and pigment epithelium and their pathogenesis in general will be discussed prior to a demonstration of the specific findings in a selected group of diseases of the retina, including diabetes, macular lesions of vascular origin and their differential diagnosis, and several other retinal diseases due to vascular pathologic processes.

COURSE 253

Room 713 Period Th-4

ABRAHAM L. KORNZWEIG, M.D.
New York, N. Y.

Practical Embryology

A study of the embryology of the eye has many practical values to the ophthalmologist. It enables him to understand the structure of the eyeball by seeing how it developed. This also helps him to better appreciate the functioning of the different parts of the globe. Above all, it makes it simpler to know which defects in the eye are due to developmental and hereditary causes, and which are due to environmental conditions.

A series of slides will be shown demonstrating critical stages in human eye development. The possible abnormalities that may result from imperfect development at each stage will be mentioned. Wherever possible, photographs of clinical eye conditions that are related to these developmental defects will be shown. These include colobomas of the choroid and optic nerve, microphthalmia, congenital cataract, deformities of the optic nerve head, persistence of the hyaloid artery and tunica vasculosa lentis, dehiscences and abnormal pigmentation of the iris and grouped pigmentation of the retina.

COURSE 254

Room 727 Period W-4 or Th-4

WILLIAM E. KREWSON, III, M.D.
Philadelphia, Pa.

Paralytic Strabismus: Problems Concerning Treatment

The more frequently encountered types of paralytic strabismus will be discussed with emphasis on methods of treatment. Also to be considered are involvement of more than one muscle in one or both eyes, some of the special syndromes, differences between congenital and acquired palsies, and related subjects.

COURSE 255

Room 731 Period W-6 or Th-6

PETER C. KRONFELD, M.D.
Chicago, Ill.

Glaucoma Surgery: End Results

A follow-up of glaucoma patients for a minimum period of eight years after surgery reveals four main facts: (1) gross differences in the response of the two principal types, the acute, narrow angle and the chronic, open angle glaucoma; (2) a strong correlation between normalization of ocular tension and stationary course of the disease in the large majority of the cases of glaucoma, (3) gross differences in the end result (in the chronic open angle type) depending upon the stage of the disease present when the normalization of tension became effective, and (4) a greater incidence of cataract than in unoperated glaucomatous or in undiseased eyes of the same age group.

COURSE 256

Room 786 Period M-6
or or
Room 795 Period W-6

PLACIDUS J. LEINFELDER, M.D.
Iowa City, Iowa

Papilledema and Optic Neuritis: Differential Diagnosis

Edema of the nerve head occurs in a number of general and local diseases, and in most instances the clinical examination of the disc does not allow one to make a differential diagnosis. This is true because edema in all cases is due to active or passive congestion of the capillaries of the nerve head. The relationship of venous pressure, increased intracranial pressure, hyperemia, and inflammation to the occurrence of swelling will be discussed in relation to the many causes for papilledema.

COURSE 257

Room 706 Period W-5 or Th-5

ALBERT N. LEMOINE, JR., M.D.
Kansas City, Mo.

Vitreous Opacities

The anatomy and embryology of the vitreous will be briefly reviewed. The physical and chemical properties found in the normal and pathologic vitreous will be summarized.

Specific types of vitreous opacities to be considered are: congenital remnants of the embryonic vascular system; protein coagula; synchysis scintillans; asteroid hyalitis; inflammatory exudates; blood; and retinitis proliferans.

Therapeutic measures will be discussed.

COURSE 258

Room 752 Period W-6

IRVING H. LEOPOLD, M.D.
Philadelphia, Pa.

Advances in Therapy

Recently several new potent agents with therapeutic possibilities have been introduced in ophthalmology. New antibiotics, chemotherapeutic agents, antiprotozoal substances, enzymatic and hormonal compounds, autonomic drugs and anesthetic agents have been undergoing investigation in ophthalmology. Their limitations, utility and optimal methods of administration will be discussed.

COURSE 259

Room 784 Period M-5 or T-5

CECIL W. LEPARD, M.D.
Detroit, Mich.

Eye Diseases Common to Children

Those ocular diseases occurring primarily in children constitute a group of special interest to the ophthalmologist, particularly when the method of examination or the differential diagnosis differs from that for those diseases in the adult. The technic and results of examination of premature infants will be discussed. The following syndromes, together with lantern slide demonstration of findings in the eye and orbit and pathologic photomicrographs, will be demonstrated: neuroblastoma, chloroma, Schuller-Christian's disease, and eosinophilic granuloma.

COURSE 260

Room 786 Period W-6

IRVIN LEVY, M.D.
Trenton, N. J.

Motion Picture Photography in Ophthalmology: Methods and Highlights

In this course we will start with a brief discussion of general motion picture photographic technic. From this point there will be a more detailed discussion of ophthalmologic photography, including examples of recommended types of equipment such as cameras, lenses, lighting and other important accessories. Specific details of photographic technic will be given, with an attempt to simplify and standardize ocular photography. Good and bad examples with reasons for such, will be shown. The technic of sound as an accessory to photography will be briefly demonstrated.

COURSE 261

Room 784 Period M-6 or T-6

PHILIP M. LEWIS, M.D.
Memphis, Tenn.

External Diseases

This course will consist of a kodachrome clinic based on 200 slides showing some unusual diseases and many common conditions of the lids, conjunctiva and cornea. The differential diagnosis and the methods of treatment, both medical and surgical, will be discussed.

COURSE 262

Room 786 Period M-5 or T-5

ARTHUR LINKSZ, M.D.
New York, N. Y.

Visual Physiology

This will be an informal discussion of some problems of practical visual physiology. The topics will include visual acuity and its correction, binocular vision, muscular balance and imbalance, eyestrain and aniseikonia. The discussion will be held on an elementary basis.

COURSE 263

Room 711 Period M-6

IRVING LUECK
Rochester, N. Y.
BY INVITATION

Practical Optics

A pair of spectacles completely changes the world as seen by the wearer. Hence these spectacles should effect a change in the right amount, and right direction, for the several different situations with which the wearer is occupied in his waking hours.

This course will take up the advantages, limitations, relationships of various types of spectacle lenses available to meet specific applications and some of the more important pitfalls encountered in their use.

COURSE 264

Room 731 Period W-4 or Th-4

DONALD J. LYLE, M.D.
Cincinnati, Ohio

Cranial Lesions: Ocular Aids in Their Diagnosis

Ocular aids in diagnosis of cranial lesions include examination of (1) media and fundi; optic papilla and retinal vessels; (2) peripheral and central visual fields; (3) eye and orbit for signs of ptosis, proptosis, vascular injection, edema or other sensation; (4) voluntary, visuomotor and proprioceptive oculogyric system and (5) pupil appearance and reactions.

COURSE 265

Room 781 Period W-4 or Th-4

JOHN P. MACNIE, M.D.
New York, N. Y.

Head Trauma with Ocular Significance

Ocular symptoms and signs associated with trauma to the head will be considered. The mechanisms whereby head injuries may lead to ocular changes will be outlined, and the effect upon the eye of involvement of the various cranial nerves and portions of the brain will be analyzed. The ocular effects of intracranial hemorrhage, injuries in the region of the cavernous sinus, and the ocular evidence of skull fracture will be considered.

COURSE 266

Room 743 Period M-6 or T-6

AUREL E. MANGOLD
New York, N. Y.
BY INVITATION

Proper Fitting of Glasses

This discussion will stress the following subjects:

1. The necessity of analyzing the prescription so that the finished glasses give the maximum of comfort and efficiency
2. Anisometropic prescriptions and effects on reading comfort
3. The importance of individual pupillary distance measurements
4. Lens form and its effect on visual comfort
5. The importance of vertex distance
6. The proper selection of bifocals in cases of hyperopia and myopia
7. Colored lenses
8. Zeiss, Kollmorgen and Feinbloom telescopic and microscopic systems
9. Methods of determining causes of patients' complaints with finished glasses
10. Suggested procedure for examination of a pair of glasses

COURSE 267

Room 727 Period W-6 or Th-6

MORTIMER MANN, M.D.
Indianapolis, Ind.

Hypertensive Vascular Changes in the Fundus

To properly interpret the changes produced in the fundus as a result of arterial hypertension, they must be correlated with other clinical and laboratory data. The various ophthalmoscopic findings in essential hypertension, malignant hypertension, toxemia of pregnancy, acute and chronic nephritis will be presented and discussed in relationship to the other manifestations of these diseases. The extent to which observations of the fundi are helpful in prognosis and treatment will also be considered.

COURSE 268

Room 738 Period W-6 or Th-6

WILLIAM A. MANN, M.D.
Chicago, Ill.

Optical Correction of Aphakia

This course will deal with the following topics of discussion: problems of refraction of the patient with early cataract; correction of aphakia; methods of objective and subjective testing; precautions in ordering lenses; analysis of unsatisfactory visual results with finished glasses; types of cataract lenses; methods of securing single binocular vision in bilateral and monocular aphakia, and contact lenses.

COURSE 269

Room 728 Period W-4 or Th-4

THEODORE G. MARTENS, M.D.
Rochester, Minn.

Problems in Presbyopia

This course is intended primarily to discuss special problems that arise in prescribing for the presbyopic patient. Management of the prepresbyopic patient who has unusual demands made upon his eyes will be covered. Special occupational needs for presbyopic patients will be dealt with in detail, including the application of occupational multifocal lenses. The prescription of lenses for patients with very unusual working distances also will be discussed.

COURSE 270

Room 715 Period M-6 or T-6

MURRAY F. McCASLIN, M.D.
Pittsburgh, Pa.

Ocular Anesthesia

This course will include a brief discussion of the anesthetic agents, curare and hyaluronidase; a review of the anatomy of the lids, orbit, globe, and lacrimal apparatus showing the relationship of landmarks to the injection site for local anesthesia.

Slides and diagrams will be used to illustrate the technics employed for anesthesia of the lids, muscles, intraocular and extraocular surgery, and surgery of the lacrimal apparatus.

Indications for and the use of general anesthesia will be given.

COURSE 271

Room 726 Period M-4 or T-4

JAMES L. McGRAW, M.D.
Syracuse, N. Y.

Contact Lenses

The relative merits of contact lenses as compared with spectacles will be presented in this course. The advantages and disadvantages of the various types of contact lenses will be reviewed. Among the lenses to be discussed are the (1) conventional fluid lens; (2) corneal lens and (3) ventilated lenses.

Comparative fitting time, wearing time, and subjective and objective effects of the various lenses will be discussed. Indications and contraindications for contact lenses will be presented.

COURSE 272

Room 726 Period M-5 or T-5

WILLIAM P. McGUIRE, M.D.
Winchester, Va.

Heterophoria and Heterotropia: Surgical Treatment

The course will deal with the most commonly accepted methods of surgically correcting the various muscle imbalances. Proper diagnosis will be stressed. Particular attention will be given to the correction of the vertical motor anomalies. Lantern slides and a short motion picture will illustrate many of the procedures.

COURSE 273

Room 17 Period W-4

SAMUEL J. MEYER, M.D.
Chicago, Ill.

Glaucoma Surgery

Most cases of glaucoma need surgery eventually. It is of utmost importance to know when to operate and what type of operation is indicated. Particular attention will be given to the indications, contraindications, and type of surgery that will best control each individual case, according to its present classification. The various types of operation will be elaborated upon.

COURSE 274

Room 726 Period M-6 or T-6

W. HOWARD MORRISON, M.D.
Omaha, Neb.

Office Management of Glaucoma

Glaucoma will be considered from the standpoint of diagnosis and its control as an office procedure. Perimetric studies, provocative tests, with particular reference to phasic variations in ocular tension and slit lamp and gonioscopic examination will be discussed.

Emphasis will be placed on the action and the proper prescribing of miotics. A consideration of office records, tension curves, disc drawings, and environmental difficulties will be undertaken. The psychology of patient-physician relationship will be stressed.

COURSE 275

Room 731 Period W-5 or Th-5

CARROLL R. MULLEN, M.D.
Philadelphia, Pa.

Ophthalmic Emergencies

Treatment of acid and alkali burns of eye and adnexa, consideration of causes and treatment for sudden loss of vision with special attention to use of anticoagulant medication will be discussed. Value of roentgen studies in ocular injuries with consideration of emergency surgical approach and prognosis and handling of anterior chamber hemorrhages, iris prolapse and iridodialysis will be studied. Emergency care of lid injuries and trauma to extraocular muscles will also be emphasized.

COURSE 276

Room 777 Period M-5

FRANK W. NEWELL, M.D.
Chicago, Ill.

Development of Refinements in Ophthalmic Surgery

Further developments in ophthalmic surgery appear to lie largely in the refinements of existing technics, particularly that portion of surgery not related to the technic of the operation. The discussion will cover the use of preoperative and postoperative sedatives and analgesics in various age groups, the choice of anesthesia, the use of antibiotics, ACTH and cortisone, and preoperative and postoperative care in various procedures.

COURSE 277

Room 727 Period W-5 or Th-5

JAMES A. OLSON, M.D.
Detroit, Mich.

Iritis, Iridocyclitis, Keratitis: Differential Diagnosis and Treatment

This course will present a review of the differential diagnostic points in acute, chronic and granulomatous inflammations of the anterior uveal tract and the nonsuppurative inflammatory lesions of the cornea. Attention will be directed to the current methods of therapy, including the use of ACTH, cortisone and hydrocortisone. The efficacy of the various methods of administering these agents (intramuscularly, intravenously, subcutaneously, orally, topically or by inhalation), the dosages, and the problems of prolonged treatment and repeated treatment will be discussed. The use of antibiotics in selected cases and other supportive therapeutic measures will be presented. Attention will be directed to the continued importance of careful physical examinations and the subsequent correction of possible causative focal defects or generalized disease processes.

COURSE 278

Room 17 Period T-4

WILLIAM C. OWENS, M.D.
ELLA M. UHLER OWENS, M.D.
Baltimore, Md.

Retrolental Fibroplasia

The course on retrolental fibroplasia will consider the following topics:

1. Methods of examining the eyes and fundi of premature infants
2. The normal appearance of the eyes and fundi of premature infants
3. The early changes and course of development of retrolental fibroplasia
4. Differential diagnosis of retrolental fibroplasia
5. Management of infants with retrolental fibroplasia
6. Present status of experimental work on retrolental fibroplasia

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COURSE 279

Room 721 Period T-5

HUBERT O. PAULSON, M.D.
Lincoln, Neb.
BY INVITATION

Lighting for Comfortable and Accurate Seeing

Illumination plays as important a part in asthenopia under present-day occupations as do refractions and muscular coordinations. The four requirements for illumination will be presented, according to more recent standards. The proper use of fluorescent and incandescent sources of light will be discussed.

COURSE 280

Room 728 Period W-5 or Th-5

CHARLES A. PERERA, M.D.
New York, N. Y.

Retinal Detachment

Successful surgery in serous detachment of the retina depends upon a knowledge of the etiologic factors, the preoperative study of the patient, and the technic of operation. In addition to a discussion of these subjects, this course will also deal with the prognosis as affected by preoperative and operative findings.

COURSE 281

Room 750 Period W-4 or Th-4

RAYMOND L. PFEIFFER, M.D.
New York, N. Y.

Differential Diagnosis with Aid of X-ray Findings

The sphere of usefulness of the x-ray in ophthalmology has been so greatly extended in recent years that it is now imperative that the ophthalmologist be familiar with its uses and limitations. In 50 per cent of cases of exophthalmos roentgenographic changes are present and are most frequently diagnostic. Tumors of the lacrimal gland, tumors of the optic nerve, dermoids and epidermoids, meningiomas, hemangiomas, and tumors of adjacent structures will be especially considered. A vast amount of classified diagnostic material prompting brief discussions of a diversity of subjects will be presented.

COURSE 282

Room 777 Period W-4 or Th-4

M. HAYWARD POST, M.D.
St. Louis, Mo.

Operating Room Technic

Many factors enter into proper operating room technic, and, without doubt, many an eye has been lost through carelessness in the execution of one or more of these factors.

1. The preparation of the operating room itself
2. The preparation of the patient after arrival at the operating room
3. The preparation of the instruments
4. The maintenance of sterility of the instruments after their preparation is completed
5. The care of the eye and the patient at the conclusion of surgery

These separate factors will be taken up in some detail, with, however, special emphasis on the third and fourth items.

Discussion will be invited.

COURSE 283

Room 727 Period T-6

M. ELLIOTT RANDOLPH, M.D.
Baltimore, Md.

Handling Patients with Advanced Glaucoma

This course will consist of a review of the rationale of various types of medical and/or surgical treatment of cases with advanced glaucoma, with analysis of particular types of advancing field defects and the appropriate medical or surgical treatment.

Advancing glaucoma in the presence of cataract, cataract following glaucoma surgery, glaucoma in the presence of retinal pathology, and the control of pain in absolute glaucoma will be discussed.

COURSE 284

Room 17 Period T-5

ALGERNON B. REESE, M.D.
New York, N. Y.

Tumors and Tumor-like Lesions of the Orbit: Diagnosis and Treatment

The types of expanding lesions of the orbit are legion, but actually those that are encountered in over 90 per cent of cases can be reduced to a relative few. An attempt is made to reduce the problem to its simplest terms and to formulate a course of procedure in handling these cases.

COURSE 285

Room 740 Period W-6 or Th-6

HELEN ROBINSON, Ph.D.
Chicago, Ill.
BY INVITATION

Reading Retardation and Vision

Reading disability has been attributed to many underlying factors. One of these is inefficient visual performance. The research dealing with vision and reading has yielded controversial and inconclusive results. However, each investigator has concluded that vision is an important consideration in individual cases. Most of these studies have overlooked some important aspects or are subject to other limitations.

An extensive investigation of visual performance and reading progress is now underway at the University of Chicago. Tentative findings will be presented. Case studies will illustrate these specific problems.

COURSE 286

Room 781 Period W-5 or Th-5

CARL J. RUDOLPH, M.D.
South Bend, Ind.

Advantages of General Anesthesia In Ophthalmic Surgery

The advantages of general anesthesia in ophthalmic surgery will be portrayed. The preparation of the patient, the administration of anesthesia and the preoperative and postoperative precautionary measures will be discussed.

COURSE 287

Room 733 Period W-6 or Th-6

WALTER Z. RUNDLES, SR., M.D.
Flint, Mich.

Streak Retinoscopy

The development and use of the streak retinoscope is reviewed. The use of the streak retinoscope is compared with that of the ordinary plane mirror retinoscope, and a procedure suitable for routine streak retinoscopy is outlined. Hyperopes are examined using the plane mirror attachment on the retinoscope, myopes with the concave mirror attachment. Among the advantages of the method are the clarity of the fundus reflex, the ability to measure accurately the refraction in different meridians of the eye individually, the accuracy with which the axis of astigmatism can be determined, the ability to perform retinoscopic examination routinely with contracted pupils and the accurate determination of refraction in the aphakic eye by merely placing a plus 8 sphere in the trial frame and proceeding from that point.

The final prescription should be checked with the Jackson crossed cylinders.

The streak retinoscope attached to a rheostat is preferred to the battery attachment.

COURSE 288

Room 777 Period M-6
or or
Room 778 Period T-6

RALPH O. RYCHENER, M.D.
Memphis, Tenn.

Lacrimal Apparatus

This course will present a general review of the lacrimal apparatus, with special emphasis on the treatment of some of the minor but rather toublesome phases encountered in private practice, as well as the more dramatic and quite satisfactory methods of tear sac surgery. The office management of congenital stenosis and the more popular technics of dacryocystorhinostomy will be fully illustrated with slides.

COURSE 289

Room 17 Period T-6

HAROLD G. SCHEIE, M.D.
Philadelphia, Pa.

Emergency Eye Surgery

This course will present the management of those conditions which result from trauma to the eye and adnexa. The management will be divided into emergency and definitive care. Emergency treatment should be mainly prophylactic and aimed at preventing further injury than that caused by the initial trauma, and to prevent as far as possible future complications. The second phase, which usually falls within the realm of the ophthalmic surgeon, will be discussed in greater detail.

COURSE 290

Room 722 Period W-6 or Th-6

HAROLD G. SCHEIE, M.D.
Philadelphia, Pa.

Surgery in Congenital Glaucoma

The surgical treatment of juvenile and infantile glaucoma will be discussed. The development of goniopuncture and the results obtained in the treatment of juvenile glaucoma will be presented. The author's method of goniotomy for infantile glaucoma will be illustrated by slides and a motion picture. An analysis of the results obtained from goniotomy, goniopuncture, or a combination of the two will be made.

COURSE 291

Room 721 Period T-6

G. VICTOR SIMPSON, M.D.
Washington, D. C.

Convergence Insufficiency and Divergence Excess: Office Management

This course will consider mainly the medical management of convergence insufficiency and divergence excess after the diagnosis has been made. The criteria upon which a muscle imbalance may be classified into one of these two groups will, however, be discussed.

The items in the management to be stressed will be the proper use of the following measures:

1. Strengthening of convergence movements by pin exercises and loose prism exercises
2. Strengthening of fusion by orthoptics
3. Overcoming suppression as an important point in the management of divergence excess
4. Correction of errors of refraction
5. Use of prisms incorporated in the glasses
6. Elimination of contributing causes such as poor general health, overwork, and emotional factors
7. Elimination of inattention or day-dreaming, which allows fusion to be broken up and abnormal divergence to be encouraged

The results of office treatment as measured by the relief of symptoms or change in the position of rest of the eyes will be discussed in this course.

COURSE 292

Room 726 Period W-5 or Th-5

JAMES W. SMITH, M.D.
New York, N. Y.

Practical Points in Office Procedure

The following subjects, selected from personal experience, will be considered:

1. Diagnostic approach in eliciting case histories
2. Consultation room psychology and philosophy
3. Helpful technics in examinations and refractions
4. Recognition and avoidance of diagnostic and therapeutic pitfalls

COURSE 293

Room 17 Period W-5

EDMUND B. SPAETH, M.D.
Philadelphia, Pa.

Surgical Diseases of the Lacrimal Gland and Lacrimal Sac

The lecturer will discuss the surgical therapy of lacrimal cystectomy and cystorhinostomy and the indications and the contraindications for each. In addition, such conditions as tumors of the lacrimal gland, intractable epiphora, lacerations of the canaliculi, traumatic sectioning of the lacrimonasal duct, and malignancy of the prelacrimal regions will be discussed.

COURSE 294

Room 711 Period M-4

EDMUND B. SPAETH, M.D.
Philadelphia, Pa.

Plastic Surgery: Practical Aspects

This course has as its purpose a consideration of the end results one should logically expect from the surgical correction of certain plastic defects of the lids and the orbit. Many of these defects can be corrected to such a degree that the postoperative condition is practically normal. In others the improvement possible cannot be so complete. A small number of plastic conditions are best treated by procedures other than surgery. It is wise, for all concerned, that these facts be recognized.

Entropion and ectropion, traumatic ptosis, congenital colobomas of the upper and lower lids, major plastic defects of the lids, symblepharon, and the contracted socket will be considered in more or less detail. Case reports, as presented by lantern slides, and the blackboard, for sketching, will be used for the presentation.

COURSE 295

Room 781 Period T-6, W-6 or Th-6

ELLIS H. STEFFENSEN, M.D.
Detroit, Mich.

Use of ACTH, Cortisone and Hydrocortisone in Ophthalmology: Contraindications, Complications and Clinical Value

A widespread clinical trial of ACTH and cortisone over the past three and a half years and a more recent trial of hydrocortisone well justify the use of these agents in the treatment of a variety of ocular diseases.

Indications for the use of these agents will be discussed. Currently accepted therapeutic programs for the treatment of acute and chronic lesions will be outlined, together with the precautionary measures necessary for the protection of the patient from possible adverse pharmacologic side effects. The physiologic basis for the use of these drugs in the treatment of various ocular lesions will be briefly reviewed.

COURSE 296

Room 743 Period M-5 or T-5

RUSSELL L. STIMSON
Los Angeles, Calif.
BY INVITATION

Lenses for the Aphakic

A simplified procedure by which cataract lens prescriptions are interpreted into best lens forms will be described. The salient optical problems of the aphakic eye and its correcting lens will be briefly reviewed. The fitting method will be evaluated by comparison of the summarized results of numerous ophthalmologists covering a three year period.

COURSE 297

Room 17 Period W-6

KENNETH C. SWAN, M.D.
Portland, Ore.

Developments in Ophthalmic Therapeutics

A number of promising now compounds are being applied clinically. These include anesthetic agents, antibiotics, analgesics, sedatives and some enzymes. The role of cortisone and related hormones in ophthalmic therapy has been clarified. Some new principles of applying older drugs have been recognized. A contemporary evaluation of some of the more important therapeutic developments will be presented.

COURSE 298

Room 743 Period W-4 or Th-4

COMDR. GEORGE LEROY TABOR, JR. (MC) USN
San Diego, Calif.

Vertical Muscles

The discussion will be confined principally to the clinical methods of diagnosing the vertical muscle palsies. Emphasis will be

placed on the differential diagnosis of pareses of the oblique muscles, particularly the superior oblique. The anatomy and physiology of the vertical muscles will be discussed briefly as they apply to the clinical investigation. The Helmholtz test, considered to be of great diagnostic benefit, will be described in detail.

COURSE 299

Room 728 Period W-6 or Th-6

EDWIN FORBES TAIT, M.D.
Norristown, Pa.

Accommodation and Convergence Abnormalities: Practical Methods in Their Correction

Accommodation and convergence are motor responses which may be considered in terms of the stimuli which initiate them. Most accommodation and binocular vision abnormalities are the result of deficiencies in those reflexes. On this basis, therefore, a clinically useful classification of abnormalities is established, affording a rational background for the development of effective orthoptic, refractive, or surgical corrective procedures.

The course will present practical methods, utilizing these principles and applicable in office practice, for the correction or relief of these ocular abnormalities.

COURSE 300

Room 750 Period W-5 or Th-5

I. S. TASSMAN, M.D.
Philadelphia, Pa.

Retinopathy in Diabetics

The characteristic fundus picture in diabetic retinopathy is described and differential diagnosis discussed. The recent knowledge concerning the occurrence and nature of the retinal lesions will be presented.

The development of vascular changes and capillary fragility in relation to the retinopathy in diabetics will be discussed.

Dysfunction of the autonomic nervous system, the occurrence of Kimmelstiel-Wilson syndrome and other disorders occurring in diabetics, will be presented.

The effect of management and treatment of the diabetic on the development of the retinopathy in all stages of the disease will be fully discussed and case records illustrated.

The importance of the ophthalmological findings in the care of these patients throughout the entire course of the disease will be emphasized.

COURSE 301

Room 784 Period W-4 or Th-4

FREDERICK H. THEODORE, M.D.
New York, N. Y.

Ocular Therapeutics

The course will offer a practical evaluation of old and new drugs used in the treatment of external diseases of the eye. The action of the drugs themselves and their therapeutic applications, as well as sensitivities and irritations arising from their use, will be considered. The choice of appropriate vehicles and other problems relating to the prescribing of drugs will be discussed. Kodachromes will be used to demonstrate clinical cases and methods of treatment.

COURSE 303

Room 777 Period W-5 or Th-5

ROBERT H. TRUEMAN, M.D.
Philadelphia, Pa.

Cerebral Lesions: Early Indications and Differential Diagnosis

The purpose of this presentation is to review the early ocular signs and symptoms of intracranial lesions. While it is possible to localize intracranial lesions by only the ocular signs, the addition of neurologic signs and symptoms increases the localizing possibilities. It is for this reason that the more important monocular manifestations are included.

It is felt that the most logical approach to the subject is in the various anatomic locations in which the lesions may occur. In this way, by means of slides, brief, pertinent reviews of the anatomy of the brain can be used to illustrate the clinical manifestations of the lesions.

COURSE 304

Room 743 Period W-5 or Th-5

EVERETT R. VEIRS, M.D.
Temple, Texas

External Dacryocystorhinostomy and a Modified Stallard Procedure

A discussion will be given as to the diagnosis of tear sac pathology and the indication for operation on the tear sac. The technic of an external dacryocystorhinostomy

will be given in detail, stressing the proper incision, hemostasis, and the proper size and place for the anastomosis. The technic of the Stallard operation on the tear sac will also be given, with particular reference to a modification to keep the new opening patent. The procedure will be illustrated by motion pictures.

COURSE 305

Room 731 Period M-5 or T-5

FRANK B. WALSH, M.D.
Baltimore, Md.

Interesting Neuro-ophthalmologic Cases: Difficult Clues in Diagnosis

A collection of cases exemplifying lesions of the optic nerves and chiasm. This has been selected as a topic on the basis that each case illustrates an important diagnostic consideration.

COURSE 306

Room 784 Period W-5 or Th-5

JOHN P. WENDLAND, M.D.
Minneapolis, Minn.

Chiasmal Lesions

The subject will be introduced by a brief discussion of the anatomy of the chiasmal region. Following this, the course will deal with the various types of field defects which chiasmal lesions may present. Associated symptoms and specific causes of chiasmal lesions will be discussed next. Emphasis will be placed upon the fact that the responsibility for early diagnosis of lesions in the neighborhood of the chiasm rests primarily upon the ophthalmologist. Cases will be presented illustrating points discussed. Where the patient's lesion was the result of a neoplasm, a diagram of the chiasm and the tumor will be shown and correlated with the visual fields.

COURSE 307

Room 724 Period W-6 or Th-6

HAROLD F. WHALMAN, M.D.
Los Angeles, Calif.

Minor Surgical Procedures of the Eye

This presentation comprises the instructor's experience in several ophthalmic operations such as those for papilloma, xanthoma, hemangioma, melanosis, chalazion, pinguecula, pterygium, mucous membrane transplant, accessory lacrimal gland, and lacrimal excretory apparatus.

Securing good local anesthesia easily and safely is as essential to success as is meticulous attention to minute details of procedure, and it will be the endeavor of the instructor to present these practical considerations.

COURSE 308

Room 750 Period W-6 or Th-6

EVERET H. WOOD, M.D.
Auburn, N. Y.

Macular Lesions: Early Diagnosis and Treatment

The course will consist of review of anatomy and physiology of the macular region. This will be followed by a discussion of some of the more common infectious inflammatory and degenerative conditions that affect the macula, with particular reference to the earliest possible diagnosis and means at our disposal for corrective therapy. The lecture will be illustrated by slides.

HOME STUDY COURSE DISCUSSION PERIODS

These discussion periods are based on the lesson material for each particular subject in the Home Study Course in Ophthalmology. Those attending a discussion period will be provided at the time of the meeting with a copy of the questions prepared for the subject under consideration. The members of the faculty will offer opinions on the clinical application of the questions and will encourage an exchange of ideas.

These discussion periods will be profitable to physicians who desire to review basic subjects and obtain their up-to-date clinical application. They are intended for physicians who have completed or who are taking the Home Study Course in Ophthalmology offered by the Academy. Members of the Home Study Course faculty and others outstanding in their respective fields will be present to answer questions or discuss problems which have arisen from the reading assignments or the monthly questions sent to registrants in the Home Study Course.

Tickets for each discussion period may be purchased individually at $2.00 per hour. The students are urged to bring their problems to the lecture room or to write in advance to one of the faculty members.

HOME STUDY A

Room 782 Period M-4

Embryology, Anatomy and Neuro-anatomy

Raymond E. Meek, M.D.
New York, N. Y.

HOME STUDY B

Room 782 Period M-5

Physiology

Hendrie W. Grant, M.D.
St. Paul, Minn.

George P. Guibor, M.D.
Chicago, Ill.

HOME STUDY C

Room 782 Period M-6

Optics and Principles of Biomicroscopy

Arthur Linksz, M.D.
New York, N. Y.

Edwin F. Tait, M.D.
Norristown, Pa.

HOME STUDY D

Room 782 Period T-4

Refraction

Frank W. Newell, M.D.
Chicago, Ill.

Manuel L. Stillerman, M.D.
Chicago, Ill.

HOME STUDY E

Room 782 Period T-5

External Diseases, Bacteriology and Virology

James H. Allen, M.D.
New Orleans, La.

S. Rodman Irvine, M.D.
Beverly Hills, Calif.

Samuel N. Key, Jr., M.D.
Austin, Texas

HOME STUDY F

Room 782 Period T-6

Perimetry and Neuro-ophthalmology

Placidus J. Leinfelder, M.D.
Iowa City, Iowa

Cecil W. Lepard, M.D.
Detroit, Mich.

HOME STUDY G

Room 782 Period W-4

Extraocular Muscles

Paul T. McAlpine, M.D.
Summit, N. J.

Hunter H. Romaine, M.D.
New York, N. Y.

Conrad Berens, M.D.
New York, N. Y.

HOME STUDY H

Room 782 Period W-5

Ophthalmoscopy and Medical Ophthalmology

William Banks Anderson, M.D.
Durham, N. C.

John P. Macnie, M.D.
New York, N. Y.

HOME STUDY I

Room 782 Period W-6

Pathology

Michael J. Hogan, M.D.
San Francisco, Calif.

John S. McGavic, M.D.
Bryn Mawr, Pa.

Georgiana D. Theobald, M.D.
Oak Park, Ill.

HOME STUDY J

Room 782 Period Th-4

Pharmacology and Therapeutics

Kenneth C. Swan, M.D.
Portland, Ore.

Alfred J. Kreft, M.D.
Portland, Ore.

CONTINUOUS COURSES AND PANEL DISCUSSIONS
OTOLARYNGOLOGY

COURSE 101

Room 736 Periods W-1, W-2

FRANZ ALTMANN, M.D.
JULES G. WALTNER, M.D.
New York, N. Y.

Histopathology of the Ear with Practical Applications—Part I

A two-period course—$4.00

COURSE 102

Room 736 Periods Th-1, Th-2

FRANZ ALTMANN, M.D.
JULES G. WALTNER, M.D.
New York, N. Y.

Histopathology of the Ear with Practical Applications—Part II

A two-period course—$4.00

Courses 101 and 102 are limited to individuals who have taken the Academy course on "Histology of the Ear" or its equivalent. They will be comprised of low and high power study of sections of the temporal bone, covering the common pathologic conditions there encountered. Particular attention will be paid to otosclerosis and related bone diseases as well as to inflammatory and neoplastic diseases. There will be a lantern slide demonstration followed by study of the actual specimens.

COURSE 103

Room 732 Periods W-2, W-3

COURSE 104

Room 732 Periods Th-2, Th-3

LAWRENCE R. BOIES, M.D.
Minneapolis, Minn.

JEROME A. HILGER, M.D.
St. Paul, Minn.
and
THEODORE RASMUSSEN, M.D.
BY INVITATION
Chicago, Ill.

Head Pain

A two-period course—$4.00

This two-hour course is being presented twice, as Course 103 on Wednesday and as Course 104 on Thursday. **Please select course number according to day on which you wish to attend.**

The task of differential diagnosis of the etiology of head pain as a chronic problem is a very common experience to the otolaryngologist.

In the past, the etiology of chronic head pain was often attributed to some form of disease within the nasal space when an obvious cause was lacking. Modern observations have changed that concept.

A classification of the causes of headache and neuralgia will be presented. Attention will be focused on those which arise in the nasal space. Differential diagnosis and treatment will be stressed. Questions will be encouraged.

COURSE 105

Room 740 Periods T-1, T-2

COURSE 106

Room 740 Periods W-2, W-3

WILLIAM T. K. BRYAN, M.D.
and
MARIAN P. BRYAN
BY INVITATION
St. Louis, Mo.

Cytologic Pathology in the Differential Diagnosis of Ear, Nose and Throat Diseases

A two-period course—$4.00

This two-hour course is being presented twice, as Course 105 on Tuesday and as Course 106 on Wednesday. **Please select course number according to day on which you wish to attend.**

What changes occur within the individual tissue cells which compose many of our pathologic patterns? The exfoliative cytology of selected cases will be correlated with pathologic tissue sections from the same cases. Malignant cells of various types, as well as radiation changes in individual cells from our tumor collection, will be shown. Intracellular morphology of columnar ciliated epithelial cells in acute upper respiratory infections and their significance thus far as seen with the Papanicolaou stain will be included. Emphasis

will be given to aural cytology with reference to the differential diagnosis by smear of acute and chronic middle ear suppurations. All points of cytology will be illustrated with kodachrome slides taken at high magnification. A resume of adaptable staining technics for exudates in ear, nose and throat will be given. Such patterns of cytologic pathology correlated with clinical symptoms present an awareness of the ever-changing processes of disease. Their use will aid in the diagnosis of difficult cases.

COURSE 107

Room 733 Periods W-1, W-2

COURSE 108

Room 733 Periods Th-1, Th-2

LOUIS H. CLERF, M.D.
F. JOHNSON PUTNEY, M.D.
Philadelphia, Pa.
DANIEL C. BAKER, JR., M.D.
New York, N. Y.

Diseases of the Larynx, Neck, Tracheobronchial Tree and Esophagus

A two-period course—$4.00

This two-hour course is being presented twice, as Course 107 on Wednesday and as Course 108 on Thursday. **Please select course number according to day on which you wish to attend.**

This period will be devoted to an informal discussion, on a question and answer basis, of diseases involving the larynx, neck, tracheobronchial tree and esophagus.

If you have any problems, real or imaginary, that occur in your everyday practice in the fields of laryngology or bronchoesophagology, bring them with you for presentation to the Problem Panel, which will try to help you. Provisions will be made for you to submit written questions during the panel discussions.

COURSE 109

Room 711 Periods T-1, T-2

COURSE 110

Room 711 Periods Th-1, Th-2

JOHN J. CONLEY, M.D.
JOHN F. DALY, M.D.
and
MAURICE LENZ, M.D.
BY INVITATION
New York, N. Y.

Cancer of the Head and Neck: Diagnosis and Treatment

A two-period course—$4.00

This two-hour course is being presented twice, as Course 109 on Tuesday and as Course 110 on Thursday. **Please select course number according to day on which you wish to attend.**

The course includes an analysis of cancers involving all the major systems of the head and neck area. This includes the various types of malignant tumors involving the epithelium, the sinuses, the ear, the lips, the tongue, the buccal mucosa, the palate, the nasopharynx, floor of the mouth, hypopharynx, parotid gland, cervical lymphatics, thyroid gland and cervical esophagus (larynx intentionally omitted because of its inclusion in other courses). The diagnosis of these various types of malignant tumors will be discussed in the pertinent factors pertaining to the history, physical examination, x-ray and chemical tests and various biopsy technics relative to each case.

A discussion of treatment will include the curative efforts embracing various types of surgery and irradiation and combinations of these two technics. It will also include the worth-while palliative efforts in the management of incurable cancer by surgery, irradiation or combinations of these technics.

COURSE 111

Room 734 Periods T-2, T-3

JOHN MARQUIS CONVERSE, M.D.
New York, N. Y.

Principles of Nasal Plastic Surgery—Basic

A two-period course—$4.00

This course will review the main steps in the typical corrective nasal plastic operation. The course will be illustrated by slides and motion pictures.

COURSE 112

Room 734 Periods W-2, W-3

JOHN MARQUIS CONVERSE, M.D.
New York, N. Y.

Principles of Nasal Plastic Surgery—Advanced

A two-period course—$4.00

This course is more advanced than the preceding one and deals, in addition to the main steps in the typical corrective nasal plastic operation, with conditions such as nasal deviations and saddle nose.

COURSE 113

Room 796 Periods Th-1, Th-2

STUART C. CULLEN, M.D.
Iowa City, Iowa
JOHN W. PENDER, M.D.
Rochester, Minn.
and
PAUL SEARLES, M.D.
BY INVITATION
Chicago, Ill.

Anesthesia for Otolaryngologic Surgery

A two-period course—$4.00

The course is designed to encourage and permit the discussion of problems related to anesthesia that are encountered in the practice of otolaryngology. Each of the panel members has had extensive experience in anesthesia for otolaryngologic surgery, and is prepared to discuss problems and answer questions in this field that may be submitted by the physicians attending the course.

It is expected that there will be problems concerning premedication, the use of cocaine and similar drugs, reactions to depressant and local anesthetic drugs, suitable anesthesia for endoscopic procedures, and the safe use of pentothal sodium and muscle relaxants.

Registrants in the course are encouraged to come to the session prepared to present specific problems of their own for discussion.

COURSE 114

Room 754 Periods T-1, T-2

EDMUND P. FOWLER, JR., M.D.
New York, N. Y.
FERNAND MONTREUIL, M.D.
Montreal, Que., Canada

Histology of the Ear—Vertical Sections

A two-period course—$4.00

COURSE 115

Room 754 Periods W-1, W-2

EDMUND P. FOWLER, JR., M.D.
New York, N. Y.
FERNAND MONTREUIL, M.D.
Montreal, Que., Canada

Histology of the Ear—Horizontal Sections

A two-period course—$4.00

Low and high power study of horizontal and vertical sections through the temporal bone at various critical levels will be presented.

The aim of these courses is to teach the participants enough cross-section anatomy in the temporal bone so that when they see medical illustrations of histologic material they will be oriented. Each participant will study selected serial sections of the temporal bone, color and label tracings so as to identify the important structures. High and low power microscopes will be available for each student, but it is requested that each participant provide himself with a box of hard colored pencils.

COURSE 116

Room 731 Periods T-2, T-3

A. C. FURSTENBERG, M.D.
Ann Arbor, Mich.
GORDON B. NEW, M.D.
Rochester, Minn.
WILLIAM C. HUFFMAN, M.D.
Iowa City, Iowa

Tumors and Infections of the Neck: A Round Table Discussion

A two-period course—$4.00

COURSE 117

Room 731 Periods W-2, W-3

COURSE 118

Room 731 Periods Th-2, Th-3

FRENCH K. HANSEL, M.D.
St. Louis, Mo.

Allergy in Otolaryngology: General Principles of Diagnosis and Treatment

A two-period course—$4.00

This two-hour course is being presented twice, as Course 117 on Wednesday and as Course 118 on Thursday. **Please select course number according to day on which you wish to attend.**

This course is planned to inform the beginner as well as the advanced student in the principles of the practice of allergy in otolaryngology. In general, the discussion will be directed toward the supplies and extracts needed, the technic of performing tests, the preparation of dilutions of extracts and the management of the various problems as presented by the patient.

COURSE 119

Room 734 Periods Th-2, Th-3

GORDON D. HOOPLE, M.D.
Syracuse, N.Y.
RAYMOND E. JORDAN, M.D.
Pittsburgh, Pa.
THEODORE E. WALSH, M.D.
St. Louis, Mo.
OLIVER W. SUEHS, M.D.
Austin, Texas

Fluid Ears

A two-period course—$4.00

It is hoped that questions will be asked which will cover the following points: etiology, pathology, diagnosis, prognosis and treatment.

It is anticipated that the discussion will touch on the various aspects of these divisions of this interesting subject.

COURSE 120

Room 732 Period T-1
Room 722 Period W-3
Room 728 Period Th-1

CHEVALIER L. JACKSON, M.D.
Philadelphia, Pa.

Peroral Endoscopy: Problems of Technic

A three-period course—$6.00

Consideration of location and character of room suitable for endoscopic clinic. Lighting and other facilities required. Types of table and other furniture. Instrumentarium for various kinds of endoscopic clinics. Anesthesia. Demonstration of position of patients for direct laryngoscopy, bronchoscopy, esophagoscopy and gastroscopy, illustrated by means of motion picture films. Technic of introduction of instrument with especial attention to the principal difficulties and ways of overcoming them. Technic of use of forceps for bronchoscopic biopsy and removal of benign tumors. Technic of electrocoagulation. Technic of catheterization of segmental bronchi. Solution of typical mechanical problems of foreign body extraction.

COURSE 121

Room 744 Periods Th-1, Th-2

V. H. KAZANJIAN, M.D.
Boston, Mass.
JOHN MARQUIS CONVERSE, M.D.
New York, N. Y.
EDGAR M. HOLMES, M.D.
Boston, Mass.

Traumatic Injuries of the Face

A two-period course—$4.00

The symposium on early treatment of facial injuries, held during the first period, will cover:

1. Emergency measures consisting of the control of primary hemorrhage, traumatic shock, and other necessary first aid measures
2. Local examination of lacerations and fractures of the face plus general physical examination
3. Early treatment of soft tissues, primary, and late primary suturing of lacerations, and the immobilization of fractures with special reference to fractures of the nasal, zygomatic and maxillary bones

The second period will be comprised of a symposium on treatment of deformities of the face of traumatic origin, including:

1. Discussion of some general principles of reconstructive surgery of the face
2. Repair of deformities involving soft tissues only
   a. Conspicuous scars without apparent loss of tissue
   b. Defects with definite loss of tissue requiring use of pedicle or skin grafts
   c. Treatment of special areas such as the eyelids, eyebrows, and stenosis of the nasal passages

3. Repair of deformities of bony structure of the face
   a. Defects of the nose
   b. Defects of the zygoma
   c. The relative value of cartilage and bone as transplants

Following presentation of these topics, ample time will be allowed for open discussion which, in the past, has proved most valuable.

COURSE 122

Room 744 Periods T-1, T-2

COURSE 123

Room 744 Periods W-1, W-2

JOHN R. LINDSAY, M.D.
Chicago, Ill.

Vertigo: Differential Diagnosis and Treatment

A two-period course—$4.00

This two-hour course is being presented twice, as Course 122 on Tuesday and as Course 123 on Wednesday. **Please select course number according to day on which you wish to attend.**

Vertigo caused by a disturbance of the inner ear or the vestibular pathways is differentiated from dizziness of other origins.

This course reviews in detail the essentials of an adequate history and the routine ear, nose and throat and functional examinations, and discusses the interpretations.

A practical classification of vertigo is presented with demonstration by case history of the various causes of vertigo within each group and the appropriate management.

COURSE 124

Room 716 Periods T-1, T-2

COURSE 125

Room 716 Periods Th-1, Th-2

RICHARD E. MARCUS, M.D.
Chicago, Ill.
and
JOHN E. BORDLEY, M.D.
Baltimore, Md.
BY INVITATION
HELMER R. MYKLEBUST, Ph.D.
Evanston, Ill.
BY INVITATION
JACQUELINE KEASTER
BY INVITATION
Los Angeles, Calif.

Hearing Problems in Children

A two-period course—$4.00

This two-hour course is being presented twice, as Course 124 on Tuesday, and as Course 125 on Thursday. **Please select course number according to day on which you wish to attend.**

To be presented are (a) methods of diagnosis in the preschool and school-age child, (b) technics available for differential diagnosis, (c) the otolaryngologist and school hearing surveys, including methods of screening, interpretation of results, and treatment, (d) rehabilitative procedures: use of hearing aids, auditory training, speech and lip reading. The material will be presented in symposium form, stressing highlights and practical detail. Each member of the symposium panel will discuss his subject, following which the audience will be invited to participate and questions about special problems will be answered.

COURSE 126

Room 722 Periods T-1, T-2

COURSE 126-A

Room 728 Periods W1, W2

PHILIP E. MELTZER, M.D.
FRANK D. LATHROP, M.D.
MOSES H. LURIE, M.D.
and
FRANCIS WEILLE, M.D.
BY INVITATION
Boston, Mass.

Otological Problems

A two-period course—$4.00

This two-hour course is being presented twice, as Course 126 on Tuesday and as Course 126-A on Wednesday. **Please select course number according to day on which you wish to attend.**

The time will be given over for an unprepared discussion with the men taking the course. They are free to participate in a stimulating and informal exchange of views concerning practical everyday problems commonly met with in our practice. The panel will be prepared to discuss all types of treatment and surgery of the ear. The registrants are urged to contribute to the discussion.

COURSE 127

Room 750 Periods T-1, T-2

COURSE 128

Room 750 Periods W-1, W-2

PAUL J. MOSES, M.D.
BY INVITATION
San Francisco, Calif.

Speech and Voice Therapy in Otolaryngology

A two-period course—$4.00

This two-hour course is being presented twice, as Course 127 on Tuesday and as Course 128 on Wednesday. **Please select course number according to day on which you wish to attend.**

Every ear, nose and throat specialist sees in his office a large number of patients with voice and speech problems. Notably, hoarseness without visible organic change is a frequent occurrence. The field of the diseases of speech and of the speaking and singing voice, including the functional and psychosomatic aspects of diagnosis and treatment, should be part of the training of the laryngologist. It is a medical field which should not be handled by the voice and speech teacher without supervision by the otolaryngologist.

This course will concentrate on practical office procedures for the analysis and treatment of disturbance of voice and speech. Acoustic diagnosis will be illustrated by phonograph records. The program comprehends the organic problems of laryngeal diseases: nodes, contact ulcers, paralysis of vocal cords, endocrine changes (mutation and its pathology), re-education of voice after laryngectomy.

Functional diseases include "professional" voice disturbances, vocal neurosis, persistent falsetto voice, pathology of the singing voice and the vocal pathology of the school child. A voice hygiene program for schools will be outlined.

Pathology and therapy of speech comprises speech development, hearing mutism, functional speech disorders like lisping, stuttering, soft palate problems (paralysis, cleft palate) and aphasia.

This course will emphasize the strictly practical approach to these problems.

COURSE 129

Room 721 Periods W-1, W-2

WERNER MUELLER, M.D.
Boston, Mass.

ARTHUR L. JUERS, M.D.
Louisville, Ky.

SCOTT N. REGER, Ph.D.
Iowa City, Iowa

Hearing Aids

A two-period course—$4.00

This will be an informal question and answer symposium on hearing aid problems as they arise in daily otologic practice. The participants are invited to submit such questions as:

When does a hard-of-hearing patient need a hearing aid?

What are the comparative merits of bone and air conduction instruments?

What are the limitations of a hearing aid?

Which is the best hearing aid?

How should the patient go about getting one?

What can the otologist do to combat high-pressure salesmanship?

COURSE 130

Room 733 Period T-1

ROBERT E. PRIEST, M.D.
Minneapolis, Minn.

NOAH D. FABRICANT, M.D.
Chicago, Ill.

and

HAROLD WRIGHT, Ph.D.
BY INVITATION
Minneapolis, Minn.

Medication for the Otolaryngologist

A one-period course—$2.00

The purpose of this course is to allow physicians attending the Academy to discuss questions concerning drugs with these well-known authorities. It is believed that this "Pharmacology Forum" will provide an interesting and profitable hour for those who elect to bring their drug problems to it.

COURSE 131

Room 715 Periods W-2, W-3

ARTHUR W. PROETZ, M.D.
St. Louis, Mo.

O. E. VAN ALYEA, M.D.
Chicago, Ill.

ANDERSON C. HILDING, M.D.
Duluth, Minn.

Rhinological Problems

A two-period course—$4.00

During the past twenty-five years considerable research and fine thinking have dispelled much of the confusion which has always been associated with nasal sinuses.

That problems still exist is evidenced by the fact that whenever sinuses come up for discussion there are always differences of opinion. This panel will be an open forum and a free expression of opinions from the floor will be encouraged. A panel board will guide the discussion and attempt to answer questions directed to it.

COURSE 132

Room 727 Periods T-2, T-3

COURSE 133

Room 727 Periods W-2, W-3

E. W. SCHELDRUP, M.D.
Iowa City, Iowa
BY INVITATION

Anatomy of the Neck in the Light of Modern Studies

A two-period course—$4.00

This two-hour course is being presented twice, as Course 132 on Tuesday and as Course 133 on Wednesday. **Please select course number according to day on which you wish to attend.**

As a guide to the otolaryngologist called upon to do operative work in the neck for an ever-increasing variety of conditions which require surgical intervention, the standard textbook of anatomy leaves a great deal to be desired and cannot be relied upon to give an accurate account of the many structures encountered.

This course is designed to rectify this inadequacy and to present the anatomy of the neck in the light of modern studies. The material to be presented represents the results of personal investigations conducted on several hundred complete neck dissections during the past twenty years and incorporates the many published papers on special aspects of neck anatomy that have appeared in a widely scattered literature during the same period of time. Practical considerations will be the keynote throughout the presentation.

COURSE 134

Room 721 Periods Th-1, Th-2

HERMAN SEMENOV, M.D.
Beverly Hills, Calif.

Current Therapy in Relation to the Applied Pathology of the Ear, Nose and Throat

A two-period course—$4.00

This course in applied pathology may be regarded as a clinical-pathological conference in which sufficient time is allowed for questions and discussion, not only of the pathology of each disease but also various methods of treating it. The salient features of the pathology will be clearly demonstrated by means of kodachrome lantern slides, and the important histology of the common, everyday lesions of the ear, nose and throat will be shown in detail. In the discussion that follows each demonstration, diagnostic and therapeutic comments pertaining to the choice of medical and/or surgical management will be entertained. The main purposes of this course, therefore, are practical: (1) to bring our knowledge of pathology up to date, and (2) to provide a solid foundation for time-honored procedures as well as newer methods of therapy. The agenda includes a wide variety of topics: rhinitis and sinusitis, infection and allergy, cytologic diagnosis of smears, tonsils and adenoids, nasopharyngeal lymphoid tissue, acute and chronic otitis media, otosclerosis and deafness, laryngeal nodes, the pathology of benign and malignant tumors, focal infection and collagen disease.

COURSE 135

Room 721 Periods T-1, T-2

BEN H. SENTURIA, M.D.
St. Louis, Mo.

JAMES W. McLAURIN, M.D.
Baton Rouge, La.

E. KING GILL, M.D.
Corpus Christi, Texas

Treatment of External Otitis

A two-period course—$4.00

The members of this panel have presented formal lectures and instructional courses on diseases involving the external ear. During these presentations the audiences have had little opportunity to question the essayists or participate in discussion. It was suggested that a panel be held to allow those interested to inquire into some phases of the subject which they felt needed elaboration.

With this in mind there will be a brief introduction of the subject by the panel members. The audience will then be offered the opportunity of asking questions or discussing briefly any problem dealing with the etiology, pathology or treatment of diseases involving the external ear.

COURSE 136

Room 726 Periods T-1, T-2

GABRIEL TUCKER, M.D.
JOSEPH P. ATKINS, M.D.
and
WILLIAM A. LELL, M.D.
BY INVITATION
Philadelphia, Pa.

Esophageal Diseases and Foreign Bodies: Diagnosis and Treatment

A two-period course—$4.00

COURSE 137

Room 726 Periods W-1, W-2

GABRIEL TUCKER, M.D.
JOSEPH P. ATKINS, M.D.
and
WILLIAM A. LELL, M.D.
BY INVITATION
Philadelphia, Pa.

Laryngeal Surgery

A two-period course—$4.00

INDIVIDUAL COURSES — OTOLARYNGOLOGY

COURSE 401

Room 716 Period T-3 or W-3

REA E. ASHLEY, M.D.
San Francisco, Calif.

Dust and Other Perennial Inhalant Therapy in Respiratory Allergy

1. Discussion of the importance of molds, house dust and industrial dusts as etiologic factors in nasal and other respiratory allergy.
2. Short-cut methods of diagnosis of dust allergy.
3. Treatment of dust allergy including prophylaxis, value of drugs, hyposensitization by sublingual absorption and by injection.
4. Practical aspects. Where to obtain materials. How to make dilutions. How to determine the size of initial doses. How to vary the dose to obtain the desired effect.
5. Results. Reasons for successes and failures.

COURSE 402

Room 727 Period T-1 or W-1

MICHAEL H. BARONE, M.D.
Buffalo, N. Y.

Hay Fever: Diagnosis and Treatment

Hay Fever Plants
  1. Slide demonstration
Types of Seasonal Hay Fever
  1. Trees, grasses, weeds
History Taking
Nasal Examination
  1. Cytology of nasal secretion
Methods of Testing
  1. Scratch, intracutaneous, passive transfer
  2. Interpretation of skin reactions
  3. Conjunctival and nasal mucosal test
Methods of Treatment
  1. Pollen hyposensitization
     a. Preseasonal, coseasonal, perennial
     b. Coseasonal optimum dosage method
  2. Factors involved in complicated and uncomplicated hay fever
  3. Sublingual pollen hay fever therapy
  4. Value of antihistaminics
  5. Value of ACTH and Cortisone
  6. Nonspecific forms of therapy

COURSE 403

Room 731 Period W-1 or Th-1

OSCAR J. BECKER, M.D.
Chicago, Ill.

Plastic Surgery of Protruding Ears

An original technic of correcting protruding ears is to be presented. This meth-

od has proved highly satisfactory in reproducing the normal contours of the auricle and in setting the ear back to the head at the proper angle.

The anatomy of the external ear, the etiology and pathology of protruding ears, and a historical survey of operative procedures will be included in the discussion.

COURSE 404

Room 734 Period T-1 or W-1

RICHARD J. BELLUCCI, M.D.
New York, N. Y.

Submucous Resection of the Nasal Septum

Surgical anatomy of the nasal septum and framework of the external nose will be reviewed.

A simplified technic for the surgical correction of the deviated nasal septum will be presented as taught at the Manhattan Eye, Ear, and Throat Hospital.

Surgical management of the anterior deviated nasal septum with obstruction of the nares will be presented.

The relative importance of the septum in plastic surgery of the nose will be discussed.

COURSE 405

Room 728 Period T-3 or W-3

JOHN E. BORDLEY, M.D.
Baltimore, Md.
BY INVITATION

Hearing Disorders in Preschool Children

This course will emphasize the diagnosis of hearing disorders in preschool children. It will describe the objective methods for evaluation of hearing in such children. Time will be devoted to practical office methods for the detection of early hearing loss. Etiology of such loss will also be discussed. Audiograms and case histories will be presented of children from 3 or 4 months to children of 5 years of age. Time will be reserved for free discussion of clinical problems in the handling of such hard of hearing children.

COURSE 406

Room 702 Period T-2 or W-2

GUY L. BOYDEN, M.D.
Portland, Ore.

Chronic Frontal Sinus Surgery

A method in which a mucoperiosteal flap is used to make a new opening into the frontal sinus without the use of tantalum or any other foreign body will be discussed.

Slides, a motion picture, and specimen will be used to demonstrate the procedure.

COURSE 407

Room 733 Period T-3 or W-3

KENNETH C. BRANDENBURG, M.D.
Long Beach, Calif.

Understanding the Problem Patient

The increasing frequency with which the term "psychosomatic" appears at medical meetings and in the literature attests to the growing realization of the importance of emotional factors in the causation of our patients' complaints. This course will deal with the type of cases in which emotional factors are likely to play an important role and the methods whereby such conditions may be recognized and dealt with.

COURSE 408

Room 750 Period W-3 or Th-3

FRIEDRICH S. BRODNITZ, M.D.
New York, N. Y.

The Actor and Singer in Ear, Nose and Throat Practice

Singers and actors form a group of growing importance in the practice of the laryngologist. To handle these patients well requires an understanding of the technics of professional use of the voice and of the medical, occupational and psychological problems of the artist.

A review of this field will be presented by dealing with such topics of practical importance as

1. Check-up examination of the vocal organs
2. Technical problems of professional singing and speaking
3. The vocal organs of the artist in infections
4. Evaluation of local treatments
5. Handling of emergencies
6. Judging the fitness to perform
7. Psychology of the artist-patient
8. Differential diagnosis of functional voice disturbances

COURSE 409

Room 721 Period W-3 or Th-3

NORTON CANFIELD, M.D.
New Haven, Conn.

Audiology for the Practicing Otologist

Based on the experience of examination, diagnosis, treatment and advice for several thousand patients with hearing loss who have sought my attention as an otologist during the past twelve years, a definite management pattern has evolved which provides these patients with a combination of services. Believing that those with impaired hearing can best be managed and advised by an otologist through all phases of their rehabilitation, the material to be presented will emphasize those features of professional attention which are so eagerly sought after by those with impaired hearing. Special attention will be given to those cases for whom the otologist usually is unable to provide specific therapy for improvement of hearing acuity. The services available to the deafened outside of the otologist's office will be discussed. Testing apparatus, including the speech audiometer, and the cooperative help of a trained assistant, will indicate the possibilities for expansion of the otologist's work in the future.

COURSE 410

Room 711 Period T-3 or Th-3

RAYMOND CARHART, Ph.D.
Evanston, Ill.
BY INVITATION

The Audiogram in Otologic Diagnosis

The course will emphasize aspects of pure tone audiometry which are particularly important in its application to diagnostic problems. Methods for clinical calibration of both the air conduction and bone conduction systems will be discussed. Particular emphasis will be given to the interpretations allowed by combined consideration of air and bone measurements. This emphasis includes review of both the basic differentiations which are possible and the audiometric configurations associated with various pathologic conditions. The audiometric patterns characterizing otosclerosis will be analyzed to illustrate the problems and methods in estimating cochlear reserve.

COURSE 411

Room 702 Period T-1 or W-1

RALPH C. CARPENTER, M.D.
Marshalltown, Iowa
and
WILLARD F. GOFF, M.D.
BY INVITATION
Seattle, Wash.

Respiratory and Swallowing Problems in the Newborn

Respiratory and swallowing emergencies in the newborn present challenging and, at times, perplexing problems to the obstetrician and pediatrician. The otolaryngologist, because of the scope of his training, can at times render invaluable assistance in these emergencies.

A short resume of the normal respiratory physiology of the newborn will be presented. Respiratory abnormalities account for a large percentage of newborn mortality and morbidity. The problem of hypoxia will be discussed from the following aspect:

1. Pulmonary abnormalities, such as pneumothorax, lung cysts, the various types of atelectasis, congenital hyaline membrane.
2. Extrapulmonary conditions, such as laryngeal anomalies, diaphragmatic hernia, glossoptosis. Deglutition abnormalities will be demonstrated, such as hypopharyngeal paresis, lower pharyngeal edema, tracheoesophageal fistula.

Methods of diagnosis will be stressed. The otolaryngologist's role in resuscitation of the newborn may be life-saving. Various types of equipment for pharyngeal and bronchial aspiration will be demonstrated.

COURSE 412

Room 715 Period T-1 or W-1

CLAUDE C. CODY III, M.D.
Houston, Texas

The Elusive Facial Nerve After It Leaves the Skull

In this course anatomy of the facial nerve will be minutely described, especially after it leaves the stylomastoid foramen. Particularly will its relationship

to the parotid gland be illustrated, beginning with the human embryo and tracing the development of both facial nerve and parotid gland to that of the full-term fetus. A surgical method of approach to the facial nerve and its identification will be presented in detail. Cadaver material and models will be employed to help illustrate this technic. Some discussion of facial nerve repair will be made. A facial nerve that is seen is not injured.

COURSE 413

Room 715 Period Th-1

SAMUEL COHEN, M.D.
Philadelphia, Pa.

Deviated Noses and Their Correction

Deviated noses are classified into four groups: (1) cartilaginous, (2) bony, (3) combined bony and cartilagincus, and (4) the dislocated septal cartilage.

Preliminary to all corrective procedures, the nasal skin is elevated and the septal cartilage is cut from the columella.

The bony deviation is corrected by removing a bony triangle from the dorsum. The nasal processes are cut and fractured at equal or unequal distances from the inner canthi and moved medially. The removed wedge of bone may be either discarded or, if necessary, reinserted to raise the depressed central bony dorsum.

In cartilaginous deformities, isolated sections of septal cartilage are removed submucously. The upper laterals are cut from the septum and the septal cartilage centralized. Sometimes a dorsal cartilage irregularity must be removed submucously and replaced by a piece of straight septal cartilage.

In the dislocated septal cartilage, the mucosa is elevated on one side of the septum and various angles of cartilage are removed. The upper laterals are cut from the septum. The cartilage is elevated from the vomerian floor. The septal cartilage is now centralized and the elevated mucosa replaced. The septal skin is sewn to the columellar skin on each side. Any excess or insufficient upper laterals are now adjusted to the septal cartilage (equalized).

In all these procedures, the perpendicular plate is rarely resected but is usually pushed centrally. Sometimes the vomer is split lengthwise and a section removed before being elevated from the palatal floor. The balance of the vomer is then placed centrally.

Photographs will be shown demonstrating varicus nasal deviations.

COURSE 414

Room 715 Period T-3

SAMUEL COHEN, M.D.
Philadelphia, Pa.

Rhinoplasty Complications

Among the postoperative sequelae that will be discussed are the following: flatness of the lower and anterior surfaces of the nasal tip, lower dorsal hump or excessive concavities, postoperative tip drops, intranasal scarring and adhesions, pinched nostrils, retracted columella, unequal nostrils, chronic lymphatic obstruction, and irregular or wide bony nasal dorsums.

COURSE 415

Room 713 Period T-2 or W-2

DONALD A. CORGILL, M.D.
McKinney, Texas

Laryngopharyngectomy and Bilateral Dissection

Patients are often seen by the laryngologist for the first time in advanced stages of carcinomatous disease with local metastasis already present. A one-stage surgical procedure encompassing all the malignant tissue together with methods of primary or secondary reconstruction, immediate and long term postoperative courses, complications and methods of dealing with them, will be described by means of color slides and color motion pictures. The utilization of such surgery following irradiation failure will be discussed. Questions are invited.

COURSE 416

Room 743 Period W-1 or Th-1

JAMES B. COSTEN, M.D.
St. Louis, Mo.

Mandibular Joint Syndrome: Differential Diagnosis and Treatment

The recognition of a commonly occurring group of pain reflexes due to abnormal function of the mandibular joint is of equal interest to the otolaryngologist, the neurosurgeon and the diagnostician.

The routine examination needed to confirm a diagnosis embraces:

1. Local findings: varieties of malocclusion, loss of teeth, tenderness of mandibular joint to palpation, crepitus within the joints, and trismus

2. X-ray study to show density changes within the joint, abnormal condylar positions and space relations and erosion of bony landmarks

3. Search for regional conditions which may supply basis for trismus or deranged jaw action

4. Definite relief of pain by fixation of lower jaw with a slight change from its habitual position.

Treatment should be based on

1. Relief of acute symptoms by baking of the jaws or use of diathermy, mild sedation, and fixation of the lower jaw by elastic, in a position of comfort, for an adequate period each day—one to two hours

2. Recognition of sources of trismus, and removal where possible of impacted teeth, abscessed teeth, parotitis and parotid tumor, infections of jaws, pharynx or neck

3. Completely balanced occlusion

4. Myotonic exercises for an adequate period after restorative dentistry, until unbalanced muscle action is synchronized.

A summary in detail will be presented, using a few selected cases which are typical of the mandibular joint neuralgia.

COURSE 417

Room 713 Period W-3 or Th-3

KENNETH L. CRAFT, M.D.
Indianapolis, Ind.

Allergic Dermatologic Conditions of the Periocular and Periauricular Regions

Allergic skin lesions are frequently encountered in routine eye, and ear, nose and throat practice.

Doctors practicing in these fields should be able to recognize these conditions and to know how to deal with them.

Classification of allergic dermatitis of these areas, based upon portal of entry:

1. Contact type
2. Intrinsic or internal type

Pathologic differentiation between typical lesions of these two types.

1. Common etiological agents and their sources
2. Industrial contacts with allergenic materials; a big problem in industry
3. Symptoms, local and systemic
4. Diagnosis of allergic dermatitis
5. Treatment
   a. Prophylaxis
   b. Hyposensitization
   c. Nonspecific
   d. General measures
6. Illustrative case reports and kodachromes

COURSE 418

Room 713 Period W-1 or Th-1

LAWRENCE S. CRISPELL, M.D.
Hanover, N. H.

Allergy in Children: Diagnosis and Treatment

This course is designed as a practical approach to the problems of diagnosis and treatment of allergy in children. Particular emphasis will be placed upon the problem of nasal allergy in children as related to colds, sinusitis, tonsillectomy, adenoidectomy, deafness, and bronchitis.

COURSE 419

Room 713 Period T-3
or or
Room 716 Period W-1

FRANCIS W. DAVISON, M.D.
Danville, Pa.

Bronchology and Bacterial Allergy

The majority of asthmatic patients who are referred for bronchoscopic examination or treatment have an infectious bronchitis as a cause of their symptoms. To properly evaluate these patients, the bronchologist must have a working knowledge of bacterial allergy. This course will deal chiefly with the practical aspects of treatment including indications and contraindications for bronchoscopy. The use of antibiotics and vaccines will be discussed. The ideas presented will be supported by case reports.

COURSE 420

Room 724 Period T-1 or W-1

KENNETH M. DAY, M.D.
Pittsburgh, Pa.

What the Otologist Can Do for Deafness

The object of the course will be to summarize the various conditions causing deafness and to discuss the efficacy and limitations of medical and surgical therapy for its relief. We shall also discuss the value and suitability of hearing aids. There will be some discussion of (a) measures for preventing pathologic ear conditions in infancy, (b) management of secretory otitis, or fluid ears, (c) the effect of radical surgery on hearing, (d) the uses of prostheses, (e) chronic catarrhal otitis, (f) otosclerosis, (g) types of nerve deafness, (h) hearing aids, (i) psychology of deafness and problems of adjustment.

COURSE 421

Room 740 Period T-3 or Th-3

EUGENE L. DERLACKI, M.D.
Chicago, Ill.

The Role of Allergy in Deafness

The purpose of this course is to emphasize the role of nasal and aural allergy as an important cause of impaired hearing. Many cases of middle ear deafness are the result of an allergy of the eustachian tube with a secretory otitis, or an allergy of the tubal and middle ear mucosa with a chronic suppurative otitis or recurring acute otitis. In contrast, only a few cases of nerve deafness are the result of allergic labyrinthine hydrops.

Since most allergic pathology is reversible, the most effective management of such allergic cases and the prevention of permanent damage to the hearing result from the early recognition and adequate control of the allergic factors. This will be achieved only when the otolaryngologist learns to make his own allergic diagnostic studies and carries out his own allergic management. Illustrative examples of allergic deafness and its management will be presented.

COURSE 422

Room 724 Period W-3 or Th-3

DAVID D. DeWEESE, M.D.
Portland, Ore.

The Problem of the Dizzy Patient

This course will attempt to cover the evaluation of the patient who comes to the physician's office with the complaint of dizziness. Some time will be spent with the classification from a symptomatic point of view with particular reference to history. The practical value of audiometer and office caloric tests will be mentioned. Various accepted treatments which have been proved of value will be discussed. Certain aspects of different types of nystagmus will be covered. The approach to this discussion will be primarily that of the practicing clinician.

COURSE 423

Room 781 Period T-1 or W-1

CLARENCE W. ENGLER, M.D.
WILLIAM F. HULSE, M.D.
Cleveland, Ohio

Tuberculosis of the Larynx: Modern Concepts

Laryngeal tuberculosis is the most common complication of pulmonary tuberculosis and is unrecognized at times by laryngologists not associated with tuberculosis sanatoriums. Laryngeal tuberculosis is always secondary to pulmonary tuberculosis.

The diagnosis of laryngeal tuberculosis depends on the sputum examination, the chest findings and the appearance of the larynx. In these cases biopsy of the laryngeal lesions should not be considered until all other diagnostic methods, including therapeutic tests, have been exhausted.

Present-day management concerns itself with the advanced pulmonary tuberculosis including indicated surgical and medical care. Streptomycin, para-aminosalicylic acid and the nicotinic acid derivatives, and the degree of neurotoxicity of each must be evaluated.

The prognosis as it concerns the local disease in the larynx is good for cure and functional restoration. Unfortunately, advanced pulmonary tuberculosis with other extrapulmonary involvements usually associated with it creates prognostic uncertainty.

COURSE 424

Room 744 Period W-3 or Th-3

JOHN B. ERICH, M.D.
Rochester, Minn.

Fractures of the Facial Bones

This course deals with fractures involving the mandible, maxilla, malar and nasal bones. The methods of treatment which have been found most effective at the Mayo Clinic will be stressed, and classifications which facilitate the management of some of these traumatic injuries will be discussed.

COURSE 425

Room 781 Period W-2 or Th-2

NOAH D. FABRICANT, M.D.
Chicago, Ill.

Modern Medication of the Nose and Sinuses

In an era of uncontrolled usage of antibiotics and antihistaminics there is greater need than ever for employing medication of the nose and sinuses in a sound, rational manner. Effective use of drugs in acute and chronic infections of the nose

and sinuses requires knowledge of such supporting clinical disciplines as physiology, pharmacology, histopathology and bacteriology.

Recent advances in the field of local and systemic medication as well as time-tested experiences with the older drugs will be reviewed and evaluated in acute and chronic nasal and sinus disease—the common cold, acute and chronic sinusitis, hypertrophic rhinitis, atrophic rhinitis, nasal allergy, and nasal vestibulitis.

COURSE 426

Room 722 or Room 728 — Period W-2 or Period Th-2

FREDERICK A. FIGI, M.D.
Rochester, Minn.

Tumors of the Ear and Mastoid

Tumors of the ear and mastoid may be divided into those of the auricle and external canal, consisting of both benign and malignant lesions, and those of the middle ear and mastoid, the majority of which are malignant or potentially so. Included among the benign group of the external ear are cysts, moles, angiomas, papillomas and fibromas, while the malignant category is comprised of epitheliomas, both basal and squamous types, melanomas, adenocarcinomas and fibrosarcomas. The lesions of the middle ear and mastoid consist of a small group primary in these situations and a large number arising externally and secondarily invading these structures. Included are epitheliomas of different types, adenocarcinomas and chemodeotomas. The management of these neoplasms varies considerably depending on their nature, situation and extent. Reconstructive procedures commonly are required either at the time of removal or secondarily.

COURSE 427

Room 781 — Period T-3 or W-3

FRANK S. FORMAN, M.D.
Little Rock, Ark.

Problems in Laryngoscopy

The chief problem in laryngoscopy is complete exposure of the entire larynx without physical or psychic trauma to the patient and with ease to the operator.

Everyone has experienced the easy laryngoscopy, and most have struggled through a difficult one terminating in a hysterical patient, inadequate examination, and a tired surgeon.

We will attempt to show in this course that practically all laryngoscopies can be done without trauma, with complete exposure and adequate forceps space, and without physical strain. We will demonstrate by motion pictures and slides the three essentials of laryngoscopic technic: anesthesia by pentothal sodium and curare, head supports eliminating unnecessary head holding, and the use of a self-retaining laryngoscope.

We feel that with these methods laryngoscopy can be simplified to the extent that laryngologists in the smaller towns and clinics can do laryngoscopy adequately.

COURSE 428

Room 781 — Period T-2 or Th-1

HARRY N. GLICK, M.D.
St. Louis, Mo.

The Sinuses: Their Development and Anatomy

This course will provide a practical demonstration and discussion of the essential anatomy of the accessory nasal sinuses. Only those changes of significance in the development of each sinus, from the fetus through childhood and adult life, will be presented and stressed from an otolaryngologic standpoint. The relationship of the sinuses to neighboring structures, so valuable in understanding the development, management and results of disease in these areas, will receive adequate consideration. Points of interest that are of clinical importance in the diagnosis and rational treatment will be reviewed. Anatomic preparations, models, x-ray films and some well-selected lantern slides will serve as a basis for the course. It is planned, also, to afford an opportunity for the examination of the material used for instruction.

COURSE 429

Room 781 — Period Th-3

ARAM GLORIG, M.D.
Washington, D.C.

Terms Used in Audiology

Seventy-five to one hundred terms used in the field of audiology will be considered in this course. An attempt will be made to

express acoustic, electronic, and engineering concepts in terms which are simple and more understandable to otolaryngologists. It is felt that such a course will be extremely valuable because there is a great deal of misunderstanding and misconception in these fields. After such a course the otolaryngologist should be able to converse and write more properly in these highly technical fields.

COURSE 430

Room 750 Period T-3

ARAM GLORIG, M.D.
Washington, D.C.

Construction of a Practical Soundproof Room

Methods of sound-treating spaces for auditory testing will be discussed. These discussions will include methods which may be applied to the doctor's office as well as the needs for screening in hearing conservation programs, on to the greater needs of the small and large audiology clinics. Plans and materials will be shown, and their effectiveness discussed.

COURSE 431

Room 782 Period W-1 or Th-1

VICTOR GOODHILL, M.D.
Los Angeles, Calif.

Management of Tinnitus

The patient with tinnitus is frequently a distressing problem to the otologist. The multiple organic causes of tinnitus and the complex psychosomatic patterns encountered make it impossible for any one approach or therapy to alleviate this problem.

A broad psychodynamic approach and certain limited specific therapeutic measures will do much to clarify this confused otologic issue.

A systematic orderly method of analysis is presented as a guide to diagnosis and as a plan for the management of the patient with tinnitus.

COURSE 432

Room 743 Period T-2 or W-2

O. ERIK HALLBERG, M.D.
Rochester, Minn.

Severe Nosebleed and its Management

A knowledge of the anatomy of the blood vessels bringing blood to the nose is of practical advantage in the selection of the method of treatment of the hemorrhage.

Every effort should be made to identify the bleeding point. The most common sites of bleeding and treatment are discussed. Treatment may vary a great deal from simple cautery and spot packing to ligation of arteries. Supportive treatment with blood transfusions, rutin, cortisone, vitamins C and K will also be discussed in detail.

The author gained his experience from the study of 212 cases treated in the hospitals of the Mayo Clinic.

COURSE 433

Room 726 Period T-3 or W-3

JOSEPH W. HAMPSEY, M.D.
Pittsburgh, Pa.

Respiratory Allergy: Symptomatic Treatment

Consideration of the symptomatic treatment of respiratory allergy still begins with the sympathomimetic drugs, especially adrenalin and ephedrine. Among the xanthine compounds, aminophylline and theophylline are in daily clinical use. The parasympathetic drugs of the atropine series have been less useful. With the introduction of the antihistaminics a long list of drugs for the symptomatic treatment of allergy became available. In some instances combinations of the antihistaminic drugs with members of the xanthine group have been found valuable. Now ACTH and cortisone have opened up an entirely new field in medicine and have been found to be increasingly helpful in the treatment of respiratory allergy, particularly the severe cases.

COURSE 434

Room 721 Period T-3
or or
Room 726 Period Th-3

JAMES A. HARRILL, M.D.
Winston-Salem, N.C.

Bronchography

The indications, contraindications, technic and complications of bronchography in adults and children will be discussed. A

technic used with adults, showing positioning of patient and x-ray views taken, will be demonstrated by motion pictures. The various pathologic lesions demonstrated by bronchography will be discussed using illustrative cases.

COURSE 435

Room 715 or Room 726 — Period T-2 or Period Th-2

HERBERT H. HARRIS, M.D.
Houston, Texas

Poliomyelitis: Management of Respiratory Complications

While the recognition and value of tracheotomy in the management of respiratory poliomyelitis has been accepted by the profession at large, in most cases the establishment of an airway has been left to the otolaryngologist. The establishment of this airway is only a minor part, and the otolaryngologist should be in a position to offer more assistance in the management of these problem cases.

The course will take up the principles of respiration, the effects of hypoxia or anoxia, and the difficulties encountered in differentiating anoxia from the effects of the disease. The indications for tracheotomy will be discussed at length, and the treatment of left side atelectasis, which so often is encountered in the respirator cases, will be considered.

The practical application of the mechanical equipment will be discussed and a short motion picture will be shown to demonstrate a simple method of doing a tracheotomy in respirator cases.

COURSE 436

Room 795 or Room 796 — Period W-2 or Period Th-3

LeROY D. HEDGECOCK, Ph.D.
Rochester, Minn.
BY INVITATION

Advanced Clinical Audiometry

A review will be given of hearing tests that go beyond the basic audiogram and yet fall within the scope of practical office procedure. The technics of administering the various tests and the methods of recording results will be presented, with a rationale of each procedure. An attempt will be made to point out the relationship of one test to another, and of each to the basic air and bone thresholds. The importance of taking a composite picture as the basis for evaluation and interpretation will be emphasized.

COURSE 437

Room 711 or Room 726 — Period W-1 or Period Th-1

HAROLD L. HICKEY, M.D.
Denver, Colo.

Functional or Organic Nervous Disease: Otolaryngologic Symptoms

Not infrequently clinical symptoms encountered in the field of otolaryngology originate in areas apart from the anatomic limits of our routine examinations. The alert clinician must be aware of such possibilities and recognize them. Analysis of some of those symptoms and signs will be undertaken to correlate them with neurogenic disease. Consideration will include such conditions as anosmia, cacosmia, parosmia; ocular, aural and nasal aura; hoarseness, aphonia, dysphagia and so-called globus hystericus; cranial nerve palsies and neuralgias; others as time allows. Attention will be called to reverse situations in which neurologic findings may point the way to diagnosis of obscure otolaryngologic pathology. Slides of roentgen films and pathologic sections will be used to clarify the presentation.

COURSE 438

Room 744 — Period T-3

JEROME A. HILGER, M.D.
St. Paul, Minn.

Direct Fixation of Facial Fractures

Facial fractures are frequently extremely complex and varied. In almost all instances, however, they are reducible to relatively simple terms. Their realignment and fixation can be accomplished by a variety of satisfactory and acceptable methods. As a basic principle to the solution of the individual problem, simplicity of the method should be the basic theme. Frequently, this simplicity is best obtained by direct wire fixation of the component fragments. To accent and elaborate some of the simple, direct approaches is the purpose of this hour.

COURSE 439

Room 732 or Room 752 — Period T-2 or Period Th-1

JEROME A. HILGER, M.D.
St. Paul, Minn.

Therapeutic Approaches to the Inner Ear

Two decades ago salient contributions to the pathology of inner ear deafness were made. Within the past decade the pathology of advanced hydrolabyrinth was added. It was attributed to a single disease entity (Meniere's disease, endolymphatic hydrops or other synonyms).

As medical knowledge of neurovascular change and endocrine imbalance increases it becomes increasingly clear that inner ear vertigo and deafness do not have a single genesis; that the labyrinthine endpathology, even that of hydrops, does not denote a single etiology; and that therapy, useful only in the formative stage, must vary to meet the cause. A stereotyped therapeutic approach must inevitably be futile in a disorder of multiple etiologies.

The causes and treatment of some of these inner ear malfunctions will be discussed.

COURSE 440

Room 722 — Period T-3 or W-1

FREDERICK T. HILL, M.D.
Waterville, Maine

Antro-Alveolar Fistulas

While many antro-alveolar fistulas may respond to conservative measures, at times the management of this condition may tax the ingenuity of the specialist. Control of any infection of the maxillary antrum is essential and, in early cases, may suffice, allowing spontaneous closure of the fistula. In cases of longer duration some plastic procedure usually will be required. The type of operation should be determined by the conditions present in each case. The technic of the reversed flap plastic, applicable to large defects, will be demonstrated.

COURSE 441

Room 743 — Period W-3 or Th-3

RAYMOND L. HILSINGER, M.D.
Cincinnati, Ohio

Vascular Headaches: Diagnosis and Treatment

In the far past all complicated headaches were considered migraine. In the more recent past, since the work of Horton, Wolff and Friedman, much has been done to classify the various types of vascular headaches. However, the pendulum as usual has swung too far to the other side and now there is far too much classification. If this continues, each little cranial artery will have its own headache syndrome.

This course will attempt to make a very simple classification with general diagnosis and treatment, discussing both vasodilating and vasospastic headaches. Both the symptomatic and prophylactic aspects of treatment will be considered.

COURSE 442

Room 710 — Period T-1 or W-1

PAUL H. HOLINGER, M.D.
Chicago, Ill.

Pediatric Laryngology

In this course the management of diseases of the larynx in infants and children will be presented. Beginning with methods of examination, the important technics of x-ray visualization will be discussed with particular attention directed toward the roentgen interpretation of etiology and site of respiratory obstruction. The problems of direct laryngoscopy will be considered, with a discussion of diagnostic and therapeutic technics. A resume of congenital and acquired lesions of the larynx in infants and children will be shown by means of slides and color motion pictures.

COURSE 443

Room 724 — Period T-3 or Th-1

PAUL H. HOLINGER, M.D.
Chicago, Ill.

Esophageal Diseases in Infants and Children

Esophageal diseases in infants and children fall into three main categories—those due to congenital anomalies, to the ingestion of caustics, and to foreign bodies. These conditions and other less frequently seen lesions will be discussed with particular stress placed upon the esophagoscopic phases of both diagnosis and treat-

ment. Instrumentarium used in esophagoscopic procedures in infants will be shown. The discussion of the various disease entities will be illustrated by slides and color motion pictures.

COURSE 444

Room 752 Period T-3 or W-3

EDGAR M. HOLMES, M.D.
Boston, Mass.

Scars of the Face: Correction and Repair

Before untertaking the correction of scars of the face, it is necessary to understand fully the fundamentals of wound healing and how disfiguring scars arise. The principles of wound healing will therefore be considered, mentioning the reaction of tissues to injury and the normal processes which take place in wound repair. With this for a basis, the various conditions which affect wound healing will be discussed and evaluated.

Many disfiguring scars could have been prevented had certain fundamentals been followed. These fundamentals will be dealt with. Questions such as: When should a wound be closed? How much cleaning should be done? Should skin be discarded to create a straight line? What sutures should be employed? will be answered. The various types of scars that are encountered, that is, the wide, keloid, contracted and depressed scars, will be considered. Mention will be made of the various causes of undesirable scars so that these pitfalls may be avoided as much as possible. Specific procedures will then be discussed for the correction of disfiguring scars. The proper method of excising scars, the importance of being sure that tension is relieved, the proper use of Z incisions and local flaps will be dealt with.

COURSE 445

Room 743 Period T-1 or Th-2

ROBERT M. HOSLER, M.D.
Cleveland, Ohio
BY INVITATION

Cardiac Arrest: Emergency Treatment in the Operating Room

Cardiac arrest in the operating room is the enigma and challenge of present day surgery and anesthesia. Obviously the best therapy for this catastrophe is in its prevention; however, to be successful in meeting this challenge when suddenly confronted with it, one must know reflexly the things to do and the things not to do. (One is just as important as the other.) One does not have time to improvise methods, as a time limitation of three to five minutes must be overcome.

Practical, precise, and detailed methods will first be presented concerning the reestablishment of the oxygen system. Secondly, the methods of restoration of the heart beat in cardiac standstill and ventricular fibrillation will be presented. These are the two conditions which are met in the operating room.

A colored motion picture will demonstrate these procedures and the Rand-Beck defibrillating machine will be on exhibition.

COURSE 446

Room 710 Period W-3 or Th-3

HOWARD P. HOUSE, M.D.
Los Angeles, Calif.

Surgery of the Chronically Discharging Ear

The indications for surgical intervention and the operation of choice in the chronically discharging ear will be presented.

A detailed description of the surgical technic used in both the modified and the radical mastoid operation will be given. The necessity of a definite detailed pattern of surgical approach in these cases will be emphasized. Many points of practical value in mastoid surgery which will aid in preventing undue surgical complications will be presented. The postoperative management of these cases will be reviewed.

This course in chronic ear surgery will be fully illustrated by slides and kodachrome motion pictures.

COURSE 447

Room 710 Period T-2 or Th-2

HOWARD P. HOUSE, M.D.
Los Angeles, Calif.

Atresia of the Ear Canal: Congenital and Acquired

The indications for surgical intervention in congenital and acquired ear canal atresia cases will be discussed in detail.

The surgical technic of operating upon congenital atresia cases will be described in detail and illustrated by a motion picture.

The management of acquired atresia of the ear canal has not always been satisfactory. A surgical technic to re-establish an adequate ear canal in these cases will be described in detail.

The postoperative care and end results which may be expected will be presented.

COURSE 448

Room 716 Period W-2 or Th-3

ROBERT E. HOWARD, M.D.
Cincinnati, Ohio

Practical Suggestions for Office Procedures in the Ear, Nose, and Throat

1. Management of the patient
2. Arrangement of treatment rooms
3. Proper sterilization of instruments and supplies
4. Special examination and treatments
   a. Routine ear, nose and throat examinations
   b. Antrum irrigations
   c. Tubal catheterization
   d. Minor surgical procedures in the office
   e. Type of anesthesia used for above procedures
   f. Allergy—skin tests and treatment
   g. X-ray for diagnosis
5. Bookkeeping for comparative studies

COURSE 449

Room 706 Period T-1 or W-1

WILLIAM C. HUFFMAN, M.D.
Iowa City, Iowa

Zygomatic Fracture-dislocations

The recent zygomatic fracture may go unrecognized because of intensive soft tissue edema. The textbook fracture-dislocation is characterized by displacement of the zygoma downward, backward, and medialward into the infratemporal fossa.

Fracture reduction is intended to relieve neurologic symptoms, temporomandibular dysfunction, and to restore normal facial contour. Early reduction is desirable to avoid fixation of the bone in an abnormal position.

COURSE 450

Room 706 Period T-2 or W-2

PERCY E. IRELAND, M.D.
Toronto, Ont., Canada

Common Sense Treatment of the Office Patient

The office practice in our specialty is not filled with the glamorous cases of textbook diseases. The largest number of patients consult a specialist for assurance and relief from the catastrophies of life. His responsibilities are far reaching and rest heavily on his shoulders.

This course will chiefly discuss, in a frank manner, how we may sort out the psychosomatic patient from those who have organic lesions requiring our skill and medical knowledge. The pitfalls which we may fall into will be fully considered, as well as the short-cuts to assessment which are so necessary in the life of a busy practitioner of our specialty.

COURSE 451

Room 706 Period T-3 or Th-3

FORDYCE A. H. JOHNSON, M.D.
Pasadena, Calif.

Adult Tonsillectomies Using Pentothal Sodium, Curare, Pontocaine and Novocain as the Anesthetic

A technic is presented for tonsillectomies on patients (14 years and older) which gives the surgeon an additional choice of anesthetic. Pentothal sodium is being used more extensively, is known to most patients, and is here presented so that it can be adapted to throat surgery with less danger to the patient and greater ease in operation by the surgeon. The lecture will be illustrated by a colored motion picture. There will be a question and answer period.

COURSE 452

Room 706 Period W-3 or Th-1

ARTHUR C. JONES, M.D.
Boise, Idaho

Helpful Hints for Everyday Practice

1. The training of a receptionist is the most important regardless of the number of doctors in the office.
2. The appearance of interest and the "overdose" of unnecessary delays.
3. Gentleness in examination.
4. Precautions before using cocaine.
5. Care in using Auline Oil in 10 per cent cocaine for eardrum anesthesia.

6. Demonstration of the Trowbridge middle ear aspirator for aero-otitis.
7. Demonstration of a nonsurgical device for the relief of collapsed alae.
8. The use of 30-gauge hypodermic needle to prevent discomfort in local anesthesia. Especially advocated for use on children.
9. Treatment of early head colds.
10. The cause and treatment of hypertrophic rhinitis.
11. The cause and treatment of certain types of ear secretions.
12. The advisability of keeping photographic records in all types of plastic surgery.

COURSE 453

Room 705 Period T-1 or W-1

LESTER T. JONES, M.D.
Portland, Ore.

Tear Sac Surgery: The Intranasal Approach

As a basis for this study, a series of one hundred consecutive intranasal dacryocystorhinostomies will be used. This technic and its advantages will be demonstrated by the use of motion pictures, slides, and anatomic specimens.

Special emphasis will be given to the handling of failures resulting from previous tear sac surgery where this or any other method has been used. This will include a simplified technic for inserting polyethylene tubing in the lacrimal passages to maintain patency.

COURSE 454

Room 712 or Room 740 Period T-2 or Period W-1

RAYMOND E. JORDAN, M.D.
Pittsburgh, Pa.

Allergy in Otology

An analysis of 727 consecutive otologic patients revealed that 27 per cent had otologic conditions caused or complicated by allergy. From this survey it is apparent that allergy has a definite role in the practice of otology. Allergy was found in 85 per cent of the patients with chronic secretory otitis media. Persistent discharge in simple types of chronic suppurative otitis media and postoperative modified or radical mastoidectomies can be caused by an allergy. Certain types of tinnitus will respond to allergic management. Some cases of Meniere's disease will respond to minimal subcutaneous doses of histamine and therefore can be considered in the allergic category. The above conditions will be discussed from the standpoint of signs, symptoms, local treatment and allergic management.

COURSE 455

Room 705 Period W-2 or Th-2

VALDEMAR M. JORDAN, M.D.
Cleveland, Ohio

Sudden Death in the Operating Room

The rarity of this disaster lulls one into complacency, yet it is common enough to affect anyone working in an operating room. Its unexpected occurrence leaves no time to learn what to do. Time is of the essence. Using the correct methods rapidly, reflexly, will be the only means of saving the patient's life.

This presentation will discuss (1) the possible causes of breakdown in the patient's oxygen system, (2) simple, easily remembered, practical steps to re-establish this system, according to the principles of Dr. Claude Beck for combating cardiac standstill and ventricular fibrillation, and (3) the medico-legal implications which may be involved.

Emphasis will be placed on what any limited specialist must do while awaiting assistance from a general, thoracic, or cardiac surgeon. If the correct initial measures are not carried out immediately, any help, regardless of its source, will be useless.

COURSE 456

Room 705 Period T-3 or Th-3

ARTHUR L. JUERS, M.D.
Louisville, Ky.

Clinical Application of Modern Hearing Tests

The physics of sound as related to the intelligent performance of hearing tests will be briefly discussed. The following clinical aspects of testing hearing function will be stressed.

1. Interpretation of audiometric curves
2. Use and abuse of masking
3. Recruitment and diplacusis
4. Speech tests in office routine

Hearing test results obtained from case records will be used to illustrate the above points.

COURSE 457

Room 711 Period W-3

JACQUELINE KEASTER
Los Angeles, Calif.
BY INVITATION

Speech and Hearing in Children Under Five Years of Age

Discussion in this course will include the following points:

1. The normal development of speech in young children, including the babbling period, the development of words and sentences, with time devoted to standards of articulation considered to be within the normal range
2. Speech retardation and its possible causes
3. Diagnostic procedures, including tests of hearing appropriate for the evaluation of hearing acuity in young children
4. Indications for training, including the use of hearing aids with borderline as well as severe hearing losses.

COURSE 458

Room 711 Period W-2

GEORGE KELEMEN, M.D.
Boston, Mass.

Tonsillar Tissue: Study of its Structure to Guide Clinical Procedure

Routine "biopsy" of the tonsil remains illusory as it invariably contains elements to be considered as response to the presence of inflammatory agents. Yet study of the finer structure, using stains, impregnation, polarization, tissue culture and preparation of extracts, gives invaluable information regarding physiology and pathology. A histologic test is suggested to help in evaluating the activity of the tonsillar tissue in any part of Waldeyer's ring.

COURSE 459

Room 706 Period Th-2

GEORGE KELEMEN, M.D.
Boston, Mass.

Mechanical Injuries of the Hearing Organ

A survey will be given on mechanical aural injury on the basis of pathology. The material is exclusively of human origin. Dealing with fractures of the skull involving the temporal bone, preference will be given to the presentation of emergencies as they occur in ordinary life, caused by a blow, by a fall from an elevation, by fast moving vehicles. Stress will be laid on the role of mechanical birth trauma with far-reaching effects in the postnatal period. Proceeding through external, middle and internal ear, the pertinent methods of diagnosis and treatment will be discussed step by step.

COURSE 460

Room 705 Period T-2 or Th-1

JOSEPH I. KEMLER, M.D.
Baltimore, Md.

Mirror Laryngoscopy

Examinations of the larynx in the indirect method will be taken up in detail. Advantages as well as shortcomings will be discussed. Operative work consisting of removal of material for biopsy, benign growths, and the use of cautery in the office for some lesions will be demonstrated by motion picture and x-ray films.

The purpose of this presentation is, first, to familiarize the younger man with the thorough examination of the larynx in the office and, second, to show the possibility and the feasibility of taking biopsies by the indirect method in the office so that there will be no delay in diagnosing malignancy.

COURSE 461

Room 752 Period T-1 or Th-3

CHARLES E. KINNEY, M.D.
Cleveland, Ohio

Acoustic Trauma

The presently known facts and experimental work on this subject will be summarized and presented in a practical fashion. Methods of control of noise production and methods of defending the ear against noise trauma will be discussed.

Audiometric tests for the determination of the extent of hearing handicaps and one's susceptibility to noise injury will be described.

COURSE 462

Room 782 Period W-2 or Th-2

CLAIR M. KOS, M.D.
Iowa City, Iowa

Clinical Orientation in the Management of Dizziness

"Dizziness" is due to such a multiplicity of disturbances that the presentation of the symptom excites a variety of perplexing diagnostic considerations.

Studies suggest three principal clinical classifications of so-called idiopathic dizziness: labyrinthine hydrops, labyrinthine ischemia, and labyrinthine apoplexy. These, of course, may necessarily be differentiated from many other conditions such as hypostatic syncope, multiple sclerosis, eighth nerve tumors, aneurysms, vasospasm, and occlusion of cerebellar and brainstem vessels which may mimic, if only temporarily, the group of labyrinthine disturbances.

COURSE 463

Room 702 Period T-3 or W-3

CLIFFORD F. LAKE, M.D.
Rochester, Minn.

Office Treatment of Chronic Suppurative Otitis Media

This course will cover the differential diagnosis of the various types of chronic otitis media, including a classification and various methods of treatment. Each type will be presented with a discussion of what one can expect from treatment of the nature which can be carried out in an office.

COURSE 464

Room 782 Period W-3 or Th-3

FRANK M. LASSMAN, Ph.D.
Minneapolis, Minn.
BY INVITATION

The Prescription of Hearing Aids

The purpose of this course is to provide the information, rationale, and method for making an effective recommendation of a hearing aid to meet the specific needs of the specific patient. The otologist can and should make a more differentiated recommendation in modified prescription form dealing with the following hearing aid and usage elements:

1. Gain, expressed in battery voltage
2. Maximum output, with specific reference to recruitment
3. Acoustic response, expressed by tone setting, receiver, etc.
4. Ear choice
5. Air conduction vs. bone conduction receiver
6. Type of earmold

Attention will also be given the following questions:

1. Who should and who should not be instructed to wear a hearing aid?
2. Transistor vs. non-transistor instruments
3. Preliminary auditory training

COURSE 465

Room 782 Period T-1
or or
Room 740 Period Th-2

FRANCIS L. LEDERER, M.D.
Chicago, Ill.

Diagnostic Approaches and Recent Trends in Otolaryngologic Practice

We have a tremendous heritage of otolaryngologic states, the fundamental diagnosis of which has not changed with the advent and preparation of newer drugs. The treatment and management have, however, been materially aided by increased evaluation of preoperative risk, improved preoperative preparation and postoperative management.

Otolaryngology bears a kinship to each field of medicine. The specialist in the field recognizes the challenge of the symptom-rich areas of the head and neck which house all of the special senses. He must have the awareness that patients are persons and as such, the specialist must be in a position to assess them in terms of the total organism, not as a single disturbed function.

COURSE 466

Room 782 Period T-2
or or
Room 740 Period Th-1

FRANCIS E. LeJEUNE, M.D.
New Orleans, La.

The Technic of Intralaryngeal Surgery

This is a continuation of the course given several years ago on Suspension Laryngoscopy.

The first phase to be dealt with for successful intralaryngeal surgery is that of anesthesia; the type as well as the technic will be discussed in detail.

Consideration will be made of benign growths, including hemangiomas, polyps, papillomas, cysts and simple edema or hydrops of the cords, accompanied by a motion picture showing the technic.

A discussion will be held on leukoplakia and its removal, early malignancy of the

cords and the procedure of removal which has given the best results.

Finally the procedure of intralaryngeal arytenoidectomy will be considered.

COURSE 467

Room 710 Period T-3 or W-2

JULIUS LEMPERT, M.D.
New York, N. Y.

Office Methods for Diagnosing Type of Hearing Loss and Degree of Correctable or Noncorrectable Physiological Hearing Function Present in a Given Deafened Ear

Clinical methods of differentiating between middle ear, inner ear, and combined middle and inner ear deafness will be demonstrated. Methods of eliciting a correct history in deafness, and correlating the history with the audiometric findings, will be given. Methods of obtaining the correct subjective and objective responses in testing hearing with the use of tuning forks will be discussed. The course will also include: Methods of finding the degree of physiological hearing function still existing in a given deafened ear, by correlation of the history with the audiometric reading and the tuning fork tests; practical methods of reaching conclusions as to whether the hearing loss in a given deafened ear is correctable or not.

COURSE 468

Room 786 Period T-1 or Th-3

JULIUS LEMPERT, M.D.
New York, N. Y.

Temporal Bone Surgery; The Anatomic and Functional Considerations

Safest methods of exposing to view the surgical anatomy during the performance of temporal bone surgery will be demonstrated. The functional considerations which must be given to the surgical anatomy involved in performing various surgical procedures on the temporal bone will be discussed.

COURSE 469

Room 786 Period W-3

NATHANIEL M. LEVIN, M.D.
Miami, Fla.

Management of Defects of Speech and Voice

This course will present briefly the practical management of the more common disorders of speech and voice as they occur in otolaryngologic practice.

Brief review of normal speech mechanism; abnormalities resulting in defective speech; special nose and throat problems of singers and speakers. The rehabilitation of laryngectomized patients will be given special consideration. Postoperative anatomic results favorable to subsequent mastery of esophageal speech, and esophageal speech training technic will be discussed fully from the combined experience of the laryngeal surgeon and teacher. Brief consideration will be given to the artificial larynx and other mechanical aids.

COURSE 470

Room 782 Period T-3
or or
Room 705 Period W-3

FRANCES COOKE MACGREGOR
New York, N. Y.
BY INVITATION

Psychological Hazards of Plastic Surgery of the Face

This course is designed to present some of the psychosocial factors which should be considered before surgery is undertaken.

While many patients will benefit psychologically from plastic surgery, there are some for whom it is contraindicated. These are the psychologically disturbed individuals who in spite of good cosmetic results will not be satisfied. They frequently demand additional operations; sometimes they become vindictive or even psychotic. To determine the type of patient for whom surgery is indicated or contraindicated, the underlying motivations for requesting operations must be taken into account. Technics for interviewing and screening patients in order to obtain this information will be discussed.

COURSE 471

Room 743 Period T-3
or or
Room 722 Period Th-1

JAMES H. MAXWELL, M.D.
Ann Arbor, Mich.

Tumors of the Face and Neck in Infancy and Childhood

Minor irregularities in the embryonic growth pattern produce anomalies which rather frequently are manifested in infants and children as soft tissue tumors and

cysts of the face and neck. It is with such teratologic lesions that this discussion is concerned primarily.

Grouped according to their anlagen, lesions derived from (1) the vascular system, (2) the nervous system, (3) the branchial structures, (4) the thyroglossal duct, and (5) faults in midline fusion will be discussed in regard to their differential diagnosis and treatment. Lantern slides illustrating the various lesions will be shown.

COURSE 472

Room 752 or Room 784 — Period T-2 or Period Th-1

F. LAMBERT McGANNON, M.D.
Lakewood, Ohio

Respiratory Allergy: Cause and Management

Allergic manifestation in both upper and lower respiratory tracts will be covered together with the various causes such as inhalants, ingestants, and injectants.

Over-all management will include discussion of methods of prevention, avoidance and treatment. Use of chemical and mechanical aids such as modern weed killers, dust precipitators, humidifiers and dehumidifiers will be accentuated. Treatment by various drugs and hyposensitization will be evaluated.

Psychosomatic factors will be mentioned.

COURSE 473

Room 795 — Period W-3 or Th-3

JAMES W. McLAURIN, M.D.
Baton Rouge, La.

Otitis Externa: Principles of Therapy

The condition which is generally termed otitis externa is actually not a single clinical entity but a number of different diseases, tied together only by the fact that they are all infections and are all located in the external ear. If otitis externa is a group of diseases rather than a single disease, no single specific treatment can be expected to be effective for them all. In the discussion of therapy, therefore, we will be concerned with general principles first and with specific agents second. Finally, methods of treatment will be reviewed and their rationale discussed.

COURSE 474

Room 732 — Period W-1 or Th-1

W. J. McNALLY, M.D.
Montreal, Que., Canada

Labyrinthine Tests

This course is designed to present the basic or elementary facts which are necessary for an understanding of clinical labyrinthine tests. Much of the time will be taken up in studying the actual methods of carrying out the various tests. Time will also be given to working out the interpretation of reactions which follow the simple tests. The simplicity of the tests will be stressed because they can be made very complex. As a brief introduction, the anatomy and physiology of the semicircular canals and the otoliths will be reviewed. The examination of spontaneous phenomena will be considered. Guides for the detection of spontaneous nystagmus will be given. An interpretation of past-pointing tests and their relation to vestibular stimulation will be studied. The technic of performing the caloric and rotation tests will be taken up in detail. The rules which govern labyrinthine reactions will be used to interpret the results of these tests. Finally, the significance of the results of the tests in labyrinthine and intracranial diagnosis will be investigated.

COURSE 475

Room 777 — Period T-1 or Th-1

RALPH J. McQUISTON, M.D.
Indianapolis, In.

Endaural Radical Mastoidectomy for Chronic Mastoiditis

The types of mastoid disease which require radical surgery will be discussed and a practical method of teaching the technic of radical mastoidectomy will be presented.

The presentation will be illustrated by slides showing the various types of endaural incisions used to expose the mastoid process and the middle ear; a safe approach to the mastoid antrum; the horizontal, posterior, and superior semicircular canals; the course of the facial nerve; the ossicles; and the other vital structures of the middle ear. A safe technic for eradicating the infection in these regions will be presented. The use of skin grafts and postoperative care will be discussed.

This type of surgery, using the high-speed motor-driven burr and with mag-

nification, gives the surgeon his best opportunity to remove the pathologic condition completely and cure the patient of his chronic mastoid disease.

COURSE 476

Room 777 Period T-2 or Th-2

ALDEN H. MILLER, M.D.
Los Angeles, Calif.

Laryngeal Emergencies in Infants and Children

This course will be a practical presentation of the diagnosis and treatment of conditions causing dangerous obstruction of the larynx and trachea in infants and children.

The acute obstructive infectious diseases of the larynx, supraglottic or subglottic, cause most emergencies, and a brief differential diagnosis and outline of treatment will be given.

A number of less common conditions are frequently presented to the otolaryngologist for immediate diagnosis and treatment. Of these the following will be discussed.

A. Newborn and infants
   1. Laryngomalacia (congenital laryngeal stridor)
   2. Glossoptosis and micronathia
   3. Tumors, trauma, paralysis
   4. Dyspnea due to tracheal compression by mediastinal tumors or anomalies as distinguished from atelectasis, bronchiolitis, agenesis, etc.

B. Children
   1. Bulbar poliomyelitis
   2. Head injuries
   3. Fracture of the larynx
   4. Foreign bodies and caustic burns
   5. Angioneurotic edema

COURSE 477

Room 777 Period T-3 or Th-3

SYLVESTER C. MISSAL, M.D.
Cleveland, Ohio

Skin Tests in Allergy: Technic and Interpretation

Although it has many shortcomings, skin testing is still a useful adjunct in evaluating nasal allergy. Most inhalant allergies, on the other hand, frequently show a negative test, making it necessary to utilize elimination diets for detecting food allergies.

The technic of intradermal and scratch tests will be demonstrated. The pitfalls and dangers of each method will be discussed. Other aids in diagnosis will be mentioned. Illustrative case material will be presented.

COURSE 478

Room 795 Period T-3 or Th-1

PAUL M. MOORE, JR., M.D.
Cleveland, Ohio

Eustachian Tube Problems

Anatomy and physiology. Relationship to the nasopharynx, nose, and sinuses. Factors influencing efficiency of function. Obstruction of the eustachian tube and its various sequelae. Conductive deafness, secretory catarrh, aero-otitis, vertigo, otitis media. The patulous eustachian tube. This condition is commonly overlooked. Its diagnosis and treatment will be stressed.

COURSE 479

Room 777 Period W-1
or or
Room 733 Period Th-3

LEWIS F. MORRISON, M.D.
San Francisco, Calif.

Laryngeal Paralysis: Cause and Treatment

The recent contributions to a more exact knowledge of the anatomy of the recurrent laryngeal nerves offer a logical, simple and complete explanation for all types of laryngeal paralysis due to injury to the peripheral portions of these nerves.

Surgery of the neck demands an intimate knowledge of the anatomic relationships of the extralaryngeal course of these nerves.

Laryngeal paralysis of peripheral origin will be presented in detail. The available reconstructive and rehabilitation procedures will be reviewed and discussed.

COURSE 480

Room 724 Period T-2

C. STEWART NASH, M.D.
Rochester, N. Y.

Otolaryngologic Mishaps

Medical and surgical accidents occur every day. Some are preventable; some are nonpreventable. The goal of all otolaryngologists should be to eliminate all preventable mishaps and to reduce to a minimum the nonpreventable ones.

This course does not deal with medicolegal problems; it is simply a confessional discussion in which mishaps are to be studied and classified, and means of prevention considered.

COURSE 481

Room 722 Period Th-3

C. STEWART NASH, M.D.
Rochester, N. Y.

Functional Diseases of the Nose

It has been estimated that about 90 per cent of the diseases of the nose are physiologic in origin.

If the normal functions of the nose are to be maintained, the nasal mucosa must be normally active; it can neither hypofunction nor hyperfunction.

This course will include informal lectures and discussions on such hypofunctioning diseases as physical, psychic, and febrile rhinitis; and such hyperfunctioning diseases as irritative, infective (the common cold) and endocrine rhinitis. Emphasis is to be laid on conditions which are often unrecognized and consequently improperly treated.

COURSE 482

Room 777 Period W-2
or or
Room 750 Period Th-2

HARRY NEIVERT, M.D.
New York, N. Y.

The Workshop for Deformed Instruments

Every surgeon who uses instruments should be able to keep them in good working condition. Particularly he should not have to send them out to be sharpened and be annoyed by the long delay in their return. A simple positive method will be taught, one that anyone can learn.

Many other details on the care of instruments will be shown, and there will be an exhibit of a number of practical instruments to increase efficiency in technic.

Those taking the course should bring with them all types of cutting instruments, knives, scissors, curets, chisels, even household knives. They will learn which ones need expert mechanic's attention and which can be repaired in a few minutes with the "Neivert Steel Whittler."

COURSE 483

Room 777 Period W-3
or or
Room 750 Period Th-1

JOSEPH H. OGURA, M.D.
St. Louis, Mo.

Laryngectomy and Neck Dissection

The technic of the one-stage widefield laryngectomy combined with a radical neck dissection in one block will be detailed on serial lantern slides to demonstrate the most efficient way for the removal of the primary malignancy and its metastasis.

The importance of the sequence of steps in the procedure, conservation of bleeding, and preservation of as much function as possible will be emphasized.

The basis of the selection of cases for surgery will be discussed. Case illustrations will be given.

A motion picture illustrating the technic will also be shown.

COURSE 484

Room 776 Period T-1
or or
Room 734 Period Th-1

PETER N. PASTORE, M.D.
Richmond, Va.

A Lump in the Throat

Patients often present themselves to the otolaryngologist with such symptoms as a lump in the throat, scratchy or itchy throat, recurrent sore throat and persistent nonproductive cough.

Palpation of the cervical structures and hurried inspection of the pharynx frequently fail to explain such symptoms.

The sensory nerve supply of the pharynx and the mechanism thought to be responsible for such symptoms will be discussed and supported with case reports and illustrations.

COURSE 485

Room 776 Period T-2 or Th-2

SAMUEL J. PEARLMAN, M.D.
Chicago, Ill.

Ear, Nose and Throat Complaints in Old Age

While there are few specific diseases of the aged, there are conditions present in all ages which in later life are often annoying, persistent, and tend on occasion to be unendurable.

A partial catalog may run as follows: dry mouth, burning tongue, postnasal

drip, fissures about the corners of the mouth and in the nasal vestibuli, early carcinoma of the pharynx, leukoplakia, crusting conditions in the nose including atrophic rhinitis, itching ears, head noises, vertigo and senile deafness. An attempt will be made to point out the important features of these complaints and to indicate, when possible, satisfactory modes of treatment.

COURSE 486

Room 776 Period T-3 or Th-3

HENRY B. PERLMAN, M.D.
Chicago, Ill.

Serous Otitis

Fluid in the middle ear may be found with a number of different clinical conditions. Examples of these various clinical states will be presented together with kodachrome slides of the associated tympanic membrane changes. Drum changes associated with complete filling of the middle ear will be demonstrated. Experiences with serous otitis media in a group of children will be analyzed. The role of the eustachian tube in this disease will be discussed and motion pictures of the tube in action will be shown.

COURSE 487

Room 732 Period T-3
or or
Room 738 Period Th-2

ARTHUR W. PROETZ, M.D.
St. Louis, Mo.

Clinical Aspects of Nasal Respiration

Abnormal air currents in the nose resulting from curvatures, spurs and partial obstructions of all kinds often result in localized areas of dryness and irritation. Symptoms, which are manifold, depend upon the areas involved. The connection is not always obvious. This course will deal (1) with the normal air currents (motion picture), (2) with aberrations produced by various obstructions (motion picture), and (3) with diagnosis and treatment.

COURSE 488

Room 784 Period T-2 or Th-3

F. JOHNSON PUTNEY, M.D.
Philadelphia, Pa.

Surgery of Neck Tumors

The practical aspects of surgery of benign and malignant neoplasms of the neck, excluding the thyroid and larynx, are presented. Epidermoid tumors of the neck are diagnostic problems and it is always necessary to search elsewhere about the head and neck for primary lesions before definitive surgical treatment of the neck lesions. The surgery of metastatic cervical nodes is discussed in detail with emphasis on the technic of radical neck dissection.

COURSE 489

Room 776 Period W-1 or Th-1

AUBREY G. RAWLINS, M.D.
San Francisco, Calif.

ACTH, Cortisone and the Antihistaminic Drugs

Physiology of the pituitary adrenal axis

Adrenal steroid hormones (simple classification)

Cortisone (Compound E)

Cortisone (Compound F)

ACTH

1. Possible modes of action of these hormones
2. Discussion of connective tissue in reference to ear, nose and throat disease
3. Contraindication to the use of cortisone and ACTH
4. Common conditions in ENT where cortisone and ACTH are useful
5. Unusual conditions in ENT where cortisone and ACTH are useful
6. Conditions in ENT where ACTH is better than cortisone
7. Conditions in ENT where cortisone is better than ACTH
8. Cortisone depresses certain actions of the adrenal cortex
9. ACTH stimulates certain actions, but also depresses certain actions of the adrenal cortex
10. Rationale of using ACTH and cortisone simultaneously
11. Common things to watch while giving ACTH and cortisone

Antihistaminics (classification)

1. Has antihistaminic power but main action may be as antihyaluronidase drugs
2. Should be looking for better antihyaluronidase drugs

3. Discussion of the known antihyaluronidases and antihistaminics
4. Indications and contraindications for use of antihistaminics and antihyaluronidase drugs

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COURSE 490

Room 786 Period T-2

SCOTT N. REGER, Ph.D.
Iowa City, Iowa

Detection of Auditory Malingering in Office Practice

This course will consider (1) the legal status of the expert witness; (2) relationships between the ear history, physical examinations, vestibular and hearing tests; and (3) demonstration of certain specific unilateral and bilateral hearing tests.

COURSE 491

Room 722 Period Th-2

SCOTT N. REGER, Ph.D.
Iowa City, Iowa

Practical Office Audiometry

This course will consider (1) the common sources of error in audiometry; (2) an adequate testing procedure; (3) the use of masking while obtaining air and bone conduction measurements; and (4) interpretation of audiograms.

COURSE 492

Room 784 Period T-3 or W-3

LYMAN G. RICHARDS, M.D.
Brookline, Mass.

Helpful Suggestions Concerning Office Practice

1. Reception of the patient
   a. Waiting room arrangements
   b. Receptionist technic
   c. Secretarial contact
   d. Arrangement of consulting room
   e. Treatment rooms
   f. Cashier contact
2. Treatment room fixtures, chair, cabinets, compressed air suction
3. Methods of anesthesia
4. Technics of specific examinations
   a. Larynx examination
   b. Nasopharyngeal examination: transillumination
   c. Antrum irrigations
   d. Audiometric setup
   e. Tubal catheterization
   f. Minor operative procedures such as nasal polypectomy, myringotomy, turbinal cauterization
   g. Physiotherapy with diathermy
   h. Remainder of time for discussion of common therapeutic problems, such as otitis externa and postnasal catarrh
   i. Role of psychosomatic approach in otolaryngology

COURSE 493

Room 776 Period W-2
or or
Room 727 Period Th-1

HERBERT J. RINKEL, M.D.
Kansas City, Mo.
BY INVITATION

Food Allergy in Otolaryngologic Practice

I. History Taking. A resume is given of the cardinal symptomatic patterns which indicate the possible existence of food allergy together with cross questions to either repudiate or substantiate this possibility.
II. Diagnostic Methods. A survey of the relative accuracy of skin tests, feeding tests, diet charts, and clinical studies.
III. Therapeutic Procedures for Food Sensitive Patients. This will be a resume of the clinical handling, advice, information, and procedures to be followed to improve the patient who is food sensitive. Particular stress will be paid to those features which the busy practitioner can use when he is not equipped to carry out minute details due to limitations of space or trained assistants.

COURSE 494

Room 776 Period W-3
or or
Room 727 Period Th-3

SAM E. ROBERTS, M.D.
Kansas City, Mo.

Medical Otolaryngology

I. The basic concepts of medical otolaryngology from a physiologic standpoint.
II. Case reports illustrating the various neurovascular lesions encountered in everyday practice.

We must recognize that the conventional fields of otolaryngology, as we knew them fifteen or twenty years ago, no longer exist. However, I firmly believe that the future of otolaryngology was never brighter. We should not regret the passing of the conventional fields, for so many new opportunities are now coming over the horizon. In these new fields we can be of greater service to more of our patients.

COURSE 495

Room 784 or Room 727 — Period W-1 or Period Th-2

J. MATHEWS ROBISON, M.D.
Houston, Texas

Otitis Media with Effusion

This course will encompass the etiology, pathology, clinical course and treatment of fluid in the tympanum as it occurs in aero-otitis media, acute catarrhal otitis media, arrested purulent otitis media, and subacute catarrhal otitis media, mastoiditis, and petrositis with effusion.

Particular attention will be given to the role of the lymphatic system in the pathogenesis of this disease. The anatomy of the retropharyngeal lymphatic system will be described and the various mechanisms by which it produces effusion in the tympanum will be considered. Attention will also be given to the occurrence of homolateral and contralateral effusion as related to the site of infection in the paranasal sinuses. The anatomic location of the retropharyngeal lymph nodes as found during dissection of 140 cadavers will be shown.

Indications for the various types of treatment advocated for relief of this condition will be evaluated. The comparative value of the various diagnostic procedures which are useful in determining the etiology of the effusion in the tympanum will be discussed.

The protein concentration and colloid osmotic pressure of the effusion, and their effect on the clinical course of this disease, will be considered.

COURSE 496

Room 733 or Room 715 — Period T-2 or Period Th-2

HARRY C. ROSENBERGER, M.D.
Cleveland, Ohio

Practical Aspects of Childhood Otology

This course will emphasize the practical and helpful features of the clinical practice of otology in children. Reflection will indicate that the salvage of hearing is greatest among the young. It is also true that certain anatomic, biologic and psychiatric factors are peculiar to childhood otology. The trend of the discussion is indicated by the following subjects: congenital atresia of the external auditory canal; the surgical significance of anatomic differences between the adult and infant temporal bone, such as unclosed sutures, exposed position of facial nerve and absent bony external auditory canal in the infant; secretory otitis media; relation of diseased tonsils and adenoids to deafness with suggested technic for thorough surgical removal of adenoids; radiation therapy; practical hearing testing, and finally the psychologic approach to the otolaryngologic examination of children. Slides and temporal bones will be utilized.

COURSE 497

Room 784 or Room 728 — Period W-2 or Period Th-3

ROBERT E. RYAN, M.D.
St. Louis, Mo.

Headache

The physiologic basis of head pain will be discussed. Following this the history-taking of the headache patient is gone over along with the routine examination usually necessary for the average headache patient. The objectives of all headache treatment are then pointed out. The differential diagnosis and treatment of various types of headache will then be presented. Among those discussed will be migraine, histaminic cephalalgia, sinusitis, myalgia, psychogenic headache, tension headache, hypertensive headache, generalized vasodilating headache, otic, ocular and the mixed type of headache.

COURSE 498

Room 795 — Period T-1 or W-1

LeROY A. SCHALL, M.D.
Boston, Mass.

Cancer of the Nose and Sinuses

The instruction hour will be spent in a summary of the cases treated between

1930 and 1935 with an analysis of the end results.

The symptoms of cancer of the nose and sinuses will be discussed and cases illustrative of these symptoms will be presented.

The principals of treatment and the operative approach will be considered.

COURSE 499

Room 738 Period T-1 or W-1

HAROLD F. SCHUKNECHT, M.D.
Chicago, Ill.

Carcinoma of Oral Cavity and Jaws: Surgical Management

Electrocoagulation or sharp dissection is the preferred treatment for cancer of the alveolar processes (gums) and the floor of the mouth.

Except for radiosensitive tumors, cancer of the maxilla should be treated by block dissection when there is a chance for complete removal.

Hemimandibulectomy or total mandibulectomy with radical neck dissection in continuity is associated with little postoperative disability.

Surgical technics will be described. Preoperative and postoperative photographs of patients will be shown, as well as gross and microscopic pictures of specimens.

COURSE 500

Room 738 Period T-2 or W-2

LYLE M. SELLERS, M.D.
Dallas, Texas

Headache: Its Otorhinologic Cause and Cure

Otorhinologic literature of recent times is so replete with discussions of headache not of otorhinologic origin that headache of true otorhinologic origin either is being overlooked or neglected in our present clinical considerations to the damage of the patient and of otorhinology. It is still a prime subject for our attention, and as such it forms the subject of this course.

There are many definite causes of true otorhinologic headache, each producing its own definite type of headache. Each cause and its clinical manifestations will be defined, described and correlated anatomically and physiologically so that exact diagnosis of these headaches of otorhinologic origin as well as those of nonotorhinologic origin may be made and the appropriate specific treatment applied. The course will be thoroughly outlined, illustrated by slides and documented by actual cases diagnosed and treated.

COURSE 501

Room 738 Period T-3 or W-3

ALBERT P. SELTZER, M.D.
Philadelphia, Pa.

Abrasion of the Face

There are many instances in which a person is disfigured by pock-marks and pits as the result of various childhood diseases and acne, and traumatic tattoos. This condition can be corrected by the abrasion operation. The surgeon employs carpenter's sandpaper of various grit, obtained from any hardware store, and cut in various dimensions equal to the circumference and width of a 2 or 3 inch gauze bandage. This sandpaper is wrapped around the gauze roll and abraded vigorously against the face. The abraded surfaces are then dried and covered with vaselinized gauze. The technic of this opreation will be described in full.

COURSE 502

Room 786 Period T-3 or Th-2

GEORGE E. SHAMBAUGH, JR., M.D.
Chicago, Ill.

Practical Office Routine in Otologic Problems

COURSE 503

Room 786 Period W-1 or Th-1

BENJAMIN H. SHUSTER, M.D.
Philadelphia, Pa.

Vestibular Apparatus: Clinical Considerations

The anatomy, physiology and pathology of the inner ear and its pathways will be briefly outlined. The resulting symptoms of nystagmus, vertigo and ataxia will be discussed. Differentiation of lesions of the labyrinth from intracranial ones will be considered. Practical application, clinically, will be emphasized.

COURSE 504

Room 712 Period T-1 or Th-1

MARVIN W. SIMMONS, M.D.
Fresno, Calif.

Intranasal Dacryocystorhinostomy

Surgery of the tear sac belongs in the field of the nasal surgeon but is neglected by too many rhinologists. The operation is much less complicated than its name. In this course emphasis will be placed upon a simple, very safe and successful technic which will give great personal satisfaction to the operator. Any specialist familiar with the routine of nasal surgery will have little difficulty learning the procedure.

COURSE 505

Room 713 Period T-1
or or
Room 724 Period W-2

KINSEY M. SIMONTON, M.D.
Rochester, Minn.

Recruitment of Loudness and Diplacusis Binauralis

The course will consist of a discussion of recruitment of loudness and diplacusis binauralis as well as the other signs which indicate deafness due to dysfunction of the cochlear end-organ. The mechanism of the phenomena will be outlined as a background for the clinical applications. Tests for these phenomena are of value in the differential diagnosis of endolymphatic hydrops from lesions of the trunk of the acoustic nerve, and in determining the phase of activity of endolymphatic hydrops. Knowledge of the phase of activity of endolymphatic hydrops aids in determining the prognosis of hearing and the result of treatment. The course will be illustrated by data obtained from patients; methods of testing for recruitment and diplacusis will be demonstrated.

COURSE 506

Room 712 Period W-2 or Th-2

J. DUDLEY SINGLETON, M.D.
Dallas, Texas

Acute Otitis Media: Present-Day Management

In the treatment of acute otitis media, the objective is to eradicate the infection, prevent recurrences, restore and preserve the hearing, and guard against other complications. A practical knowledge of the anatomy of the middle ear and its adnexa in both the infant and adult and a sound understanding of the pathologic processes that occur within these structures in the presence of infection, combined with a broad knowledge of the effectiveness and limitations of the various chemotherapeutic and antibiotic agents at our disposal, will aid greatly in the choice and application of the measures necessary to attain the above-mentioned objective.

The subject will be considered under the following headings:

1. Anatomy
2. Etiology and pathology
3. Bacteriology
4. Treatment
5. Comment
6. Summary and conclusions

Appropriate slides will be used in presenting the subject. Management of stubborn difficult cases and of troublesome recurrent cases will be stressed.

COURSE 507

Room 710 Period Th-1

EMANUEL M. SKOLNIK, M.D.
Chicago, Ill.

Cleft Palate: Relationship to Otolaryngology

This course is designed to examine and discuss recent trends and practices in meeting the complex needs of the cleft palate patient. Habilitation through the use of a clinical team as it functions in the Cleft Palate Center of the University of Illinois will be described. The place of prosthetic and of surgical treatment will be examined in terms of the anatomic and physiologic disturbances that are characteristic of this disability. The conduct of the otorhinolaryngologic care of cleft palate patients with chronic otitis media, hearing impairment, upper respiratory infections, the tonsil and adenoid problem, and nasal deformities will receive special emphasis.

COURSE 508

Room 796 Period W-1
or or
Room 702 Period Th-1

WAYNE B. SLAUGHTER, M.D.
Chicago, Ill.
BY INVITATION

Blood Vessel Tumors of Head and Neck: Incidence, Pathology and Treatment

The incidence of the hemangiomas as encountered in a total population of 3,500,000 people over a period of ten years will be given. The incidence in relation to

other congenital defects will also be emphasized and the relationship of the reportable incidences at the time of birth in relation to the subsequent development of the tumors will be brought out. The pathology, as now understood, in relation to the different classifications of blood vessel tumors, from portwine stains to cavernous hemangiomas, will be reviewed and a simplified classification suggested. The pathology and outline of the treatment that has been utilized in the past will be briefly reviewed. A summary will be given of the treatment as carried out in our clinics employing sclerosing technic as compared with surgery as applied in indicative cases. A review of 600 cases under treatment will be given.

COURSE 509

Room 796 Period T-1 or W-3

JOSEPH A. SULLIVAN, M.D.
Toronto, Ont., Canada

Facial Paralysis and Bell's Palsy

The surgical anatomy of the seventh nerve will be briefly reviewed as it pertains to temporal bone surgery. The differential diagnosis between an upper and lower motor neuron lesion will be emphasized.

The various causes of facial nerve paralysis will be enumerated. Instrumentation with the temporal bone will be so depicted as to demonstrate the method of avoiding injury to the facial nerve. The likely sites for injury will be demonstrated as a result of experience gained over many years.

Various methods of repair, end-to-end apposition, the interposition of a nerve graft, the rerouting of the nerve, how to handle a paralysis as a result of fracture to the base of the skull, will all be included.

The use of a fresh or degenerated nerve graft, still a question of doubt in many minds, will be clarified. The problem of Bell's palsy will be emphasized strictly from the otologic point of view. If time permits, the presentation will be terminated by a motion picture in color.

COURSE 510

Room 712 Period T-3 or W-3

WILLIAM C. THORNELL, M.D.
Cincinnati, Ohio

Intralaryngeal Arytenoidectomy in Bilateral Vocal Cord Paralysis

Various external operations have been described for the correction of bilateral abductor vocal cord paralysis. This course will deal with the intralaryngeal approach for arytenoidectomy which has been successfully applied in cases of bilateral abductor vocal cord paralysis. The surgery is carried out through the Lynch laryngeal suspension apparatus under combined local and intravenous pentothal sodium with curare.

The various modifications that have been introduced as well as complications to be considered will be discussed. Lantern slides will be used to demonstrate the technic of operation, and recordings of the voice taken before and after surgery will be presented.

COURSE 511

Room 784 Period T-1 or Th-2

FRED R. TINGWALD, M.D.
Cleveland, Ohio

Tumors of the Paranasal Sinuses

A presentation of benign and malignant tumors of the paranasal sinuses, including the life history of the neoplasms, methods used in establishing the diagnoses and extent of the lesions, therapeutic methods employed, reconstruction by prosthesis, and ultimate results.

The above phases will be illustrated by lantern slides demonstrating the x-ray findings, gross and microscopic appearances of the tumors, and the preoperative and postoperative appearance.

COURSE 512

Room 712 Period W-1
or or
Room 713 Period Th-2

G. EDWARD TREMBLE, M.D.
Montreal, Que., Canada

Practical Therapeutics in Office Practice

In this course a number of common conditions encountered every day by otolaryngologists will be discussed.

1. Nasal obstruction due to engorged or hypertrophied inferior turbinates and treatment outlined.

2. Methods of shrinking the posterior tips.

3. The conservative treatment of sinusitis in view of our present knowledge.

4. A safe and simple method of irrigating the sphenoid sinus. This is important in cases of optic neuritis. A six-minute colored film clearly shows a few important measurements and instruments used in this procedure.

5. External otitis although more frequently seen in warm climates is a common complaint. Treatment in this condition has changed considerably in the past ten years due to greater knowledge. The modern concept appears to be that various strains of Pseudomonas aeruginosa (Bacillus pyocyaneus) are the causative factors in most cases. This will be dealt with and the infrequency of fungous infections mentioned. The relative merits of the current antibiotics will be described and a number of suggestions given which have proven of value in these difficult cases.

6. The tonsil and adenoid problem — our present-day concept. This subject will be touched upon in the light of recent knowledge and if time permits the indications and contraindications for the operation. The general conditions most likely to be improved and the time to operate will also be given.

COURSE 513

Room 738 Period Th-1

O. E. VAN ALYEA, M.D.
Chicago, Ill.

Embryology of the Ear, Nose, and Throat

I. Embryonic Stage

During the first eight weeks of intrauterine life, the structures which compose the ear, nose, and throat are in the formative stage of development. The major changes which take place at this time will be considered step by step by means of lantern slides and wax reconstructions.

II. Fetal Stage

The changes which occur from the eighth week are of especial interest to the otolaryngologist. In this course considerable time will be devoted to the study of serial sections made from fetal heads of various ages with special emphasis on those periods which deal with the origin and development of the nasal sinuses.

III. Congenital Defects

These occur largely as a result of growth defects in the early formative stages of the embryo. Anomalies of the various types encountered in clinical practice will be studied by means of lantern slide projections of charts, x-rays, photographs and specimens from the cadaver.

COURSE 514

Room 731 Period T-1

O. E. VAN ALYEA, M.D.
Chicago, Ill.

Modern Management of Chronic Sinusitis

Persistence of a sinus infection implies inadequate drainage. Factors contributing to drainage impairment may be local or systemic. The local factors may be anatomic or pathologic in nature and in some cases the sinusitis is maintained by a combination of contributing causes.

The goal of the rhinologist is to eliminate the causative factors while treating the infection. Most cases respond to simple measures, such as infraction of the middle turbinate, or the removal of a few polyps along with the control of allergy. Progress in treatment of the cases is noted by occasional roentgenologic studies with iodized oil in the sinus and by examination of the exudate removed by irrigation. In those cases which fail to respond readily to carefully directed treatment there is usually some overlooked contributing systemic or local factor. In certain cases thickened mucosa lines the sinus ostium to such an extent as to occlude, or nearly occlude, the drainage outlet and extra drainage openings (windows) may be required.

Seldom is the radical removal of sinus mucosa in the treatment of sinusitis indicated, and it should be instituted with the knowledge that only temporary relief may be expected and that a return of the symptoms, even more pronounced than formerly, may result.

In this course the technics of various therapeutic measures used successfully in the management of sinus disease will be discussed in detail.

COURSE 515

Room 795 Period T-2
or or
Room 786 Period W-2

THEODORE E. WALSH, M.D.
St. Louis, Mo.

Acute and Chronic Otitis Media: Treatment

1. The etiology of acute otitis media will be discussed.
2. The pathogenesis and pathologic changes in acute otitis media will be reviewed with special attention to the healing processes in the mastoid air cells.
3. The rational treatment in each stage of the disease will be suggested.
4. A classification of chronic otitis media in relation to the dangers of the condition will be offered.
5. Therapy, "medical" and "surgical," will be discussed.

COURSE 516

Room 796 Period T-3

FRANCIS L. WEILLE, M.D.
Boston, Mass.
BY INVITATION

Nasal and Sinus Surgery in Respiratory Allergy

The practical surgical management of the nasal and sinus pathology seen in "allergic" individuals will be discussed with special reference to vasomotor rhinitis and to asthma.

COURSE 517

Room 796 Period T-2
or or
Room 702 Period Th-2

WALTER P. WORK, M.D.
San Francisco, Calif.

Technics in Wide Field Laryngectomy

This course is designed primarily for those persons who are in training in otorhinolaryngology and for those who have shown some interest and aptitude in neck surgery.

The detailed step-by-step technics in wide field laryngectomy will be emphasized by means of lantern slides and colored motion pictures. The approach to surgery of this region of the neck will be further stressed according to fascial planes and pertinent anatomic structures as worked out using fresh cadaver material, cross section studies, and technics and procedures in the operating room. The low collar incision which the author uses will be illustrated.

The historical development of this operation will be given and full acknowledgment credited to those surgeons who have been instrumental in developing various technics in wide field laryngectomy.

COURSE 518

Room 796 Period W-2
or or
Room 702 Period Th-3

SIDNEY K. WYNN, M.D.
Milwaukee, Wis.

Facial Injuries: Primary and Secondary Plastic Repair

The recognition of early intensive therapy for the care of acute severe facial injuries is becoming more apparent over the past years due to the increasing use of the automobile and the mechanization of industry. An all to common belief is that plastic repair of the severe facial injury is something that could or should wait for several days following injury. It is definitely much better to institute plastic repair as soon as one possibly can, depending upon the general condition of the patient following the injury.

The basic principles in the general plastic repair of acute severe facial injuries will be discussed with the illustration and discussion of specific technics in care of certain facial injuries.

If these principles are adhered to, many patients can be spared months of repetitious reconstructive surgery which they might have to undergo if their lacerations are sutured by the old time rapid emergency means for control of bleeding without regard for landmarks, muscle approximation, and proper build-up of underlying tissues.

The Following Are Condensed Schedules of Courses Previously Described

CONTINUOUS COURSES — OPHTHALMOLOGY

COURSE	SPEAKERS	SUBJECT	PERIODS USED
1	Allen, J. H., et al	Bacteriology & Infectious Diseases	8 PERIODS M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5
2	Ascher	Aqueous Veins in Glaucoma	2 PERIODS M-5, M-6
3	Bedell	Medical Ophthalmoscopy	4 PERIODS M-5, T-5, W-5, Th-5
4	Berliner	Slit Lamp Microscopy: Advanced	4 PERIODS M-4, T-4, W-4, Th-4
5	Birge, et al	New Theories of Vascular Disease	3 PERIODS M-4, T-4, W-4
6	Boeder	Aniseikonia & Space Eikonometry	2 PERIODS T-5, T-6
7	Brown, et al	Eye Muscles	8 PERIODS M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5
8	Byrnes	Ophthalmic Filters	2 PERIODS M-5, M-6
9	Callahan, et al	Fundamentals of Plastic Surgery	6 PERIODS M-5, M-6, T-5, T-6 W-5, W-6
10	Clark	Surgery of Ocular Muscles	2 PERIODS T-5, T-6
11 or 12	Copeland	Streak Retinoscopy	4 PERIODS M-4, M-5, T-4, T-5 or W-4, W-5, Th-4, Th-5
13	Costenbader, et al	Comitant Strabismus	12 PERIODS M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6
14	DeVoe	Clinical Application of Gonioscopy	2 PERIODS W-4, W-5
15	Dunnington & Clark	Retinal Detachment	3 PERIODS T-4, W-4, Th-4
16	Fink	Management of Oblique Muscle Problems	3 PERIODS M-5, T-5, W-5
17	Friedenwald	Studies in Aqueous Flow	2 PERIODS M-4, M-5
18	Guibor	Orthoptics: Office & Home Technics	3 PERIODS T-6, W-6, Th-6
19	Hardy, et al	Basic Principles of Orthoptics	4 PERIODS M-4, T-4, W-4, Th-4
20	Henderson	Practical Perimetry	4 PERIODS M-4, M-5, T-4, T-5
21	Hughes, et al	Plastic Surgery: Advanced	8 PERIODS M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5
22	Jardon	Fitting of Ocular Prostheses	2 PERIODS T-5, T-6
23 or 24	Johnson, L. V. & Ballintine	Aqueous Tonography	2 PERIODS M-4, M-5 or T-4, T-5
25 or 26	Johnson, V. C., & Dunlap	Diagnostic Value of X-ray	2 PERIODS M-5, M-6 or T-5, T-6

CONTINUOUS COURSES — OPHTHALMOLOGY

COURSE	SPEAKERS	SUBJECT	PERIODS USED
27	Knighton, et al	Highlights of Glaucoma	8 PERIODS M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5
28	Kuhn	Industrial Ophthalmology	3 PERIODS M-4, T-4, W-4
29	Lloyd	Macular Lesions	2 PERIODS M-5, T-5
30	Lowrey & Albright	Military Ophthalmology	2 PERIODS M-4, M-5
31	McLean, et al	Cataract Surgery	12 PERIODS M-4, M-5, M-6, T-4 T-5, T-6, W-4, W-5 W-6, Th-4, Th-5, Th-6
32	Meek	Surgical Anatomy of Orbit	2 PERIODS Th-4, Th-5
33	Meyer, et al	Glaucoma	8 PERIODS M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5
34	Ogle	Essential Aspects of Binocular Vision	2 PERIODS M-5, M-6
35	O'Rourke	Manifest & Cycloplegic Refraction	2 PERIODS T-5, T-6
36	Osher	Squint Surgery	2 PERIODS W-5, W-6
37	Paton	Corneal Surgery	3 PERIODS M-6, T-6, W-6
38	Payne, et al	Practical Eye Pathology	8 PERIODS M-4, M-5, T-4, T-5, W-4, W-5, Th-4, Th-5
39	Pino	Bifocal Lenses & Presbyopia	2 PERIODS M-4, T-4
40	Romaine, et al	Ocular Motility	12 PERIODS M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6
41	Rucker	Neuro-ophthalmology	4 PERIODS M-4, T-4, W-4, Th-4
42 or 43	Schepens	Ophthalmoscopy in Diagnosis of Retinal Detachment	2 PERIODS M-5, M-6 or T-5, T-6
44	Sloane, et al	Refraction	6 PERIODS T-4, T-5, W-4, W-5, Th-4, Th-5
45	Theobald, et al	Histopathology	12 PERIODS M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6
46	Thorpe, et al	Slit Lamp Biomicroscopy	12 PERIODS M-4, M-5, M-6, T-4, T-5, T-6, W-4, W-5, W-6, Th-4, Th-5, Th-6
47	Thorpe	Surgery of Intraocular Foreign Bodies	2 PERIODS T-4, W-4
48	Wheeler & Knapp	Concomitant Strabismus	6 PERIODS M-5, M-6, T-5, T-6, W-5, W-6
49	Wiener	Practical Points in Surgery	3 PERIODS M-4, T-4, W-4

SCHEDULE OF INDIVIDUAL COURSES — OPHTHALMOLOGY — Monday

Key M-4 — 2:00 p.m. to 3:00 p.m.

Course No.	SPEAKER	SUBJECT
201	Aldrich	Psychosomatic Medicine
202	Alvaro	Uveitis: Etiology & Treatment
206	Baker	Neuralgias of Head
210	Berke	Surgery of Oblique Muscles
217	Chace	Ocular Malingering
218	Chamberlain	Vertical Motor Anomalies
222	Cusick	Ptosis
224	DeVoe	Corneal Dystrophies
226	Dunnington	End Results in Eye Muscle Surgery
227	Egan	Cross Cylinder Application & Theory
245	Harley	Lesions of the 3rd, 4th & 6th Cranial Nerves
250	Joy	Angiography in Ophthalmology
271	McGraw	Contact Lenses
294	Spaeth	Plastic Surgery
A	Home Study	Embryology, Anatomy & Neuro-Anatomy

Key M-5 — 3:15 p.m. to 4:15 p.m.

Course No.	SPEAKER	SUBJECT
225	Dunlap	Divergence Anomalies
230	Fralick	Surgical Anatomy of Operations for Glaucoma
233	Fry	Lesions at Posterior Pole of Eye
238	Gipner	Recent Advances
242	Gray	Intraocular Foreign Bodies
246	Harris	Anesthetic Agents & Technics
259	Lepard	Eye Diseases Common to Children
262	Linksz	Visual Physiology
272	McGuire	Heterophoria and Heterotropia
276	Newell	Development of Refinements in Ophthalmic Surgery
296	Stimson	Lenses for the Aphakic
305	Walsh	Interesting Neuro-ophthalmologic Cases
B	Home Study	Physiology

Key M-6 — 4:30 p.m. to 5:30 p.m.

Course No.	SPEAKER	SUBJECT
205	Atkinson	Measures in Cataract Surgery
209	Berens	Cyclodiathermy, Iridencleisis, Cyclodialysis
212	Boyes	Eye Surgery Problems
213	Burch	Psychosomatic Medicine
215	Calhoun	Dystrophies & Degenerations of Cornea
220	Chandler	Cataract Surgery: Secondary Procedures
223	Cutler	Procedures Used in Enucleation
228	Falls	Ocular Geriatrics
234	Gailey	Complications of Cataract Surgery
235	Gemeroy	External Diseases of Eye
236	Gibson	Retinopathies: Differential Diagnosis
240	Goar	Complications of Cataract Surgery
243	Haik	Beta Irradiation
247	Hogan	Pathology of the Choroid
248	Hughes	Plastic Surgery: Minor Procedures
256	Leinfelder	Papilledema & Optic Neuritis
261	Lewis	External Diseases
263	Lueck	Practical Optics
266	Mangold	Proper Fitting of Glasses
270	McCaslin	Ocular Anesthesia
274	Morrison	Office Management of Glaucoma
288	Rychener	Lacrimal Apparatus
C	Home Study	Optics & Principles of Biomicroscopy

SCHEDULE OF INDIVIDUAL COURSES — OPHTHALMOLOGY — Tuesday

Key T-4 — 2:00 p.m. to 3:00 p.m.

Course No.	SPEAKER	SUBJECT
201	Aldrich	Psychosomatic Medicine
202	Alvaro	Uveitis: Etiology & Treatment
206	Baker	Neuralgias of Head
210	Berke	Surgery of Oblique Muscles
214	Byrnes	Adjuncts in Teaching Ophthalmology
217	Chace	Ocular Malingering
218	Chamberlain	Vertical Motor Anomalies
222	Cusick	Ptosis
224	DeVoe	Corneal Dystrophies
227	Egan	Cross Cylinder Application & Theory
229	Falls	Practical Application of Heredity
250	Joy	Angiography in Ophthalmology
271	McGraw	Contact Lenses
278	Owens & Owens	Retrolental Fibroplasia
D	Home Study	Refraction

Key T-5 — 3:15 p.m. to 4:15 p.m.

Course No.	SPEAKER	SUBJECT
225	Dunlap	Divergence Anomalies
233	Fry	Lesions at Posterior Pole of Eye
238	Gipner	Recent Advances
242	Gray	Intraocular Foreign Bodies
246	Harris	Anesthetic Agents & Technics
259	Lepard	Eye Diseases Common to Children
262	Linksz	Visual Physiology
272	McGuire	Heterophoria & Heterotropia
279	Paulson	Lighting for Comfortable & Accurate Seeing
284	Reese	Tumors & Tumor-like Lesions of the Orbit
296	Stimson	Lenses for the Aphakic
305	Walsh	Interesting Neuro-ophthalmologic Cases
E	Home Study	External Diseases, Bacteriology & Virology

Key T-6 — 4:30 p.m. to 5:30 p.m.

Course No.	SPEAKER	SUBJECT
205	Atkinson	Measures in Cataract Surgery
209	Berens	Cyclodiathermy, Iridencleisis, Cyclodialysis
213	Burch	Psychosomatic Medicine
215	Calhoun	Dystrophies & Degenerations of Cornea
220	Chandler	Cataract Surgery: Secondary Procedures
223	Cutler	Procedures Used in Enucleation
234	Gailey	Complications of Cataract Surgery
235	Gemeroy	External Diseases of Eye
236	Gibson	Retinopathies: Differential Diagnosis
240	Goar	Complications of Cataract Surgery
243	Haik	Beta Irradiation
261	Lewis	External Diseases
266	Mangold	Proper Fitting of Glasses
270	McCaslin	Ocular Anesthesia
274	Morrison	Office Management of Glaucoma
283	Randolph	Handling Patients with Advanced Glaucoma
288	Rychener	Lacrimal Apparatus
289	Scheie	Emergency Eye Surgery
291	Simpson	Convergence Insufficiency & Divergence Excess
295	Steffensen	ACTH, Cortisone & Hydrocortisone
F	Home Study	Perimetry & Neuro-ophthalmology

SCHEDULE OF INDIVIDUAL COURSES — OPHTHALMOLOGY — Wednesday

Key W-4 — 2:00 p.m. to 3:00 p.m.

Course No.	SPEAKER	SUBJECT
203	Alvis	End Results of Cataract Wound Closure
204	Amenabar	Detachment of Retina
211	Bettman	Value of Goniotomies
216	Cassady	Dacryocystitis of Infancy
237	Gifford	Dacryocystorhinostomy
241	Gordon	Surgical Importance of Orbital Fascia
254	Krewson	Paralytic Strabismus
264	Lyle	Cranial Lesions
265	Macnie	Head Trauma with Ocular Significance
269	Martens	Problems in Presbyopia
273	Meyer	Glaucoma Surgery
281	Pfeiffer	Diagnosis with Aid of X-Ray
282	Post	Operating Room Technic
298	Tabor	Vertical Muscles
301	Theodore	Ocular Therapeutics
G	Home Study	Extraocular Muscles

Key W-5 — 3:15 p.m. to 4:15 p.m.

Course No.	SPEAKER	SUBJECT
219	Chamlin	Perimeter: Types & Technics
232	Fread	Ideal Refraction Equipment
239	Givner	Systemic Disease
244	Hanser	Studies in Ocular Allergy
249	Jobe	Refraction
251	Katz	Corneal Dystrophies
257	Lemoine	Vitreous Opacities
275	Mullen	Ophthalmic Emergencies
277	Olson	Iritis, Iridocyclitis & Keratitis
280	Perera	Retinal Detachment
286	Rudolph	Advantages of General Anesthesia
292	Smith	Practical Points in Office Procedure
293	Spaeth	Lacrimal Gland & Sac
300	Tassman	Retinopathy in Diabetics
303	Trueman	Cerebral Lesions
304	Veirs	External Dacryocystorhinostomy & Modified Stallard Procedure
306	Wendland	Chiasmal Lesions
H	Home Study	Ophthalmoscopy & Medical Ophthalmology

Key W-6 — 4:30 p.m. to 5:30 p.m.

Course No.	SPEAKER	SUBJECT
208	Bellows	Cataract
212	Boyes	Eye Surgery Problems
221	Cholden	Informing Patient of Blindness: Psychiatric Aspects
252	Klien	Clinical Pathology of Retinal Lesions
255	Kronfeld	Glaucoma Surgery: End Results
256	Leinfelder	Papilledema & Optic Neuritis
258	Leopold	Advances in Therapy
260	Levy	Motion Picture Photography: Methods & Highlights
267	Mann, M.	Hypertensive Vascular Changes in Fundus
268	Mann, W.	Optical Correction of Aphakia
285	Robinson	Reading Retardation & Vision
287	Rundles	Streak Retinoscopy
290	Scheie	Surgery in Congenital Glaucoma
295	Steffensen	ACTH, Cortisone & Hydrocortisone
297	Swan	Ophthalmic Therapeutics
299	Tait	Accommodation & Convergence Abnormalities
307	Whalman	Minor Surgical Procedures of Eye
308	Wood	Macular Lesions
I	Home Study	Pathology

SCHEDULE OF INDIVIDUAL COURSES — OPHTHALMOLOGY — Thursday

Key Th-4 — 2:00 p.m. to 3:00 p.m.

Course No.	SPEAKER	SUBJECT
203	Alvis	End Results of Cataract Wound Closure
204	Amenabar	Detachment of Retina
211	Bettman	Value of Goniotomies
216	Cassady	Dacryocystitis of Infancy
237	Gifford	Dacryocystorhinostomy
241	Gordon	Surgical Importance of Orbital Fascia
253	Kornzweig	Practical Embryology
254	Krewson	Paralytic Strabismus
264	Lyle	Cranial Lesions
265	Macnie	Head Trauma with Ocular Significance
269	Martens	Problems in Presbyopia
281	Pfeiffer	Diagnosis with Aid of X-Ray
282	Post	Operating Room Technic
298	Tabor	Vertical Muscles
301	Theodore	Ocular Therapeutics
J	Home Study	Pharmacology & Therapeutics

Key Th-5 — 3:15 p.m. to 4:15 p.m.

Course No.	SPEAKER	SUBJECT
207	Barkan	Congenital Glaucoma
208	Bellows	Cataract
232	Fread	Ideal Refraction Equipment
239	Givner	Systemic Disease
244	Hanser	Studies in Ocular Allergy
249	Jobe	Refraction
251	Katz	Corneal Dystrophies
257	Lemoine	Vitreous Opacities
275	Mullen	Ophthalmic Emergencies
277	Olson	Iritis, Iridocyclitis & Keratitis
280	Perera	Retinal Detachment
286	Rudolph	Advantages of General Anesthesia
292	Smith	Practical Points in Office Procedure
300	Tassman	Retinopathy in Diabetics
303	Trueman	Cerebral Lesions
304	Veirs	External Dacryocystorhinostomy & Modified Stallard Procedure
306	Wendland	Chiasmal Lesions

Key Th-6 — 4:30 p.m. to 5:30 p.m.

Course No.	SPEAKER	SUBJECT
252	Klien	Clinical Pathology of Retinal Lesions
255	Kronfeld	Glaucoma Surgery: End Results
267	Mann, M.	Hypertensive Vascular Changes in Fundus
268	Mann, W.	Optical Correction of Aphakia
285	Robinson	Reading Retardation & Vision
287	Rundles	Streak Retinoscopy
290	Scheie	Surgery in Congenital Glaucoma
295	Steffensen	ACTH, Cortisone & Hydrocortisone
299	Tait	Accommodation & Convergence Abnormalities
307	Whalman	Minor Surgical Procedures of Eye
308	Wood	Macular Lesions

CONTINUOUS COURSES AND PANEL DISCUSSIONS
OTOLARYNGOLOGY

COURSE	SPEAKERS	SUBJECT	PERIODS USED
101	Altmann & Waltner	Histopathology of Ear—Part I	2 PERIODS W-1, W-2
102	Altmann & Waltner	Histopathology of Ear—Part II	2 PERIODS Th-1, Th-2
103 or 104	Boies, et al	Head Pain	2 PERIODS W-2, W-3 or Th-2, Th-3
105 or 106	Bryan & Bryan	Cytologic Pathology in the Differential Diagnosis of ENT Diseases	2 PERIODS T-1, T-2 or W-2, W-3
107 or 108	Clerf, et al	Diseases of the Larynx, Neck, Tracheobronchial Tree & Esophagus	2 PERIODS W-1, W-2 or Th-1, Th-2
109 or 110	Conley, et al	Cancer of Head & Neck	2 PERIODS T-1, T-2 or Th-1, Th-2
111	Converse	Nasal Plastic Surgery—Basic	2 PERIODS T-2, T-3
112	Converse	Nasal Plastic Surgery—Advanced	2 PERIODS W-2, W-3
113	Cullen, et al	Anesthesia for Otolaryngologic Surgery	2 PERIODS Th-1, Th-2
114	Fowler & Montreuil	Histology of Ear — Vertical Sections	2 PERIODS T-1, T-2
115	Fowler & Montreuil	Histology of Ear — Horizontal Sections	2 PERIODS W-1, W-2
116	Furstenberg, et al	Tumors & Infections of the Neck	2 PERIODS T-2, T-3
117 or 118	Hansel	Allergy	2 PERIODS W-2, W-3 or Th-2, Th-3
119	Hoople, et al	Fluid Ears	2 PERIODS Th-2, Th-3
120	Jackson	Peroral Endoscopy	3 PERIODS T-1, W-3, Th-1
121	Kazanjian, et al	Traumatic Injuries of Face	2 PERIODS Th-1, Th-2
122 or 123	Lindsay	Vertigo	2 PERIODS T-1, T-2 or W-1, W-2
124 or 125	Marcus, et al	Hearing Problems in Children	2 PERIODS T-1, T-2 or Th-1, Th-2
126 or 126-A	Meltzer, et al	Otological Problems	2 PERIODS T-1, T-2 or W-1, W-2
127 or 128	Moses	Speech & Voice Therapy	2 PERIODS T-1, T-2 or W-1, W-2
129	Mueller, et al	Hearing Aids	2 PERIODS W-1, W-2
130	Priest, et al	Medication for the Otolaryngologist	1 PERIOD T-1
131	Proetz, et al	Rhinological Problems	2 PERIODS W-2, W-3
132 or 133	Scheidrup	Anatomy of the Neck	2 PERIODS T-2, T-3 or W-2, W-3
134	Semenov	Therapy in Pathology of ENT	2 PERIODS Th-1, Th-2
135	Senturia, et al	External Otitis	2 PERIODS T-1, T-2
136	Tucker, et al	Esophageal Diseases & Foreign Bodies	2 PERIODS T-1, T-2
137	Tucker, et al	Laryngeal Surgery	2 PERIODS W-1, W-2

SCHEDULE OF INDIVIDUAL COURSES — OTOLARYNGOLOGY — Tuesday

Key T-1 — 9:00 a.m. to 10:00 a.m.

Course No.	SPEAKER	SUBJECT
402	Barone	Hay Fever
404	Bellucci	Submucous Resection of Nasal Septum
411	Carpenter & Goff	Respiratory and Swallowing Problems in the Newborn
412	Cody	The Elusive Facial Nerve
420	Day	What the Otologist Can Do for Deafness
423	Engler & Hulse	Tuberculosis of the Larynx
442	Holinger	Pediatric Laryngology
445	Hosler	Cardiac Arrest
449	Huffman	Zygomatic Fracture-Dislocations
453	Jones, L. T.	Tear Sac Surgery
461	Kinney	Acoustic Trauma
465	Lederer	Diagnostic Approaches & Recent Trends
468	Lempert	Temporal Bone Surgery
475	McQuiston	Endaural Radical Mastoidectomy
484	Pastore	A Lump in the Throat
498	Schall	Cancer of the Nose & Sinuses
499	Schuknecht	Carcinoma of the Oral Cavity & Jaws
504	Simmons	Intranasal Dacryocystorhinostomy
505	Simonton	Recruitment of Loudness and Diplacusis Binauralis
509	Sullivan	Facial Paralysis and Bell's Palsy
511	Tingwald	Tumors of the Paranasal Sinuses
514	Van Alyea	Chronic Sinusitis

Key T-2 — 10:15 a.m. to 11:15 a.m.

Course No.	SPEAKER	SUBJECT
406	Boyden	Chronic Frontal Sinus Surgery
415	Corgill	Laryngopharyngectomy & Bilateral Dissection
428	Glick	The Sinuses
432	Hallberg	Severe Nosebleed
435	Harris	Poliomyelitis: Respiratory Complications
439	Hilger	Therapeutic Approaches to the Inner Ear
447	House	Atresia of the Ear Canal
450	Ireland	Common Sense Treatment of Office Patients
454	Jordan, R. E.	Allergy in Otology
460	Kemler	Mirror Laryngoscopy
466	LeJeune	Intralaryngeal Surgery
472	McGannon	Respiratory Allergy
476	Miller	Laryngeal Emergencies in Infants & Children
480	Nash	Otolaryngologic Mishaps
485	Pearlman	ENT Complaints in Old Age
488	Putney	Surgery of Neck Tumors
490	Reger	Detection of Auditory Malingering
496	Rosenberger	Practical Aspects of Childhood Otology
500	Sellers	Headache
515	Walsh	Acute & Chronic Otitis Media
517	Work	Wide Field Laryngectomy

Key T-3 — 11:30 a.m. to 12:30 p.m.

Course No.	SPEAKER	SUBJECT
401	Ashley	Dust & Other Perennial Inhalant Therapy
405	Bordley	Hearing Disorders in Preschool Children
407	Brandenburg	Understanding the Problem Patient
410	Carhart	Audiogram in Otologic Diagnosis
414	Cohen	Rhinoplasty Complications
419	Davison	Bronchology & Bacterial Allergy
421	Derlacki	Role of Allergy in Deafness
427	Forman	Problems in Laryngoscopy
430	Glorig	Construction of a Practical Soundproof Room
433	Hampsey	Respiratory Allergy
434	Harrill	Bronchography
438	Hilger	Direct Fixation of Facial Fractures
440	Hill	Antro-Alveolar Fistulas
443	Holinger	Esophageal Diseases in Infants & Children
444	Holmes	Scars of the Face
451	Johnson	Anesthesia in Adult Tonsillectomies
456	Juers	Hearing Tests
463	Lake	Chronic Suppurative Otitis Media
467	Lempert	Diagnosing Type of Hearing Loss
470	Macgregor	Psychological Hazards of Plastic Surgery of the Face
471	Maxwell	Tumors of the Face & Neck in Infancy & Childhood
477	Missal	Skin Tests in Allergy
478	Moore	Eustachian Tube Problems
486	Perlman	Serous Otitis
487	Proetz	Clinical Aspects of Nasal Respiration
492	Richards	Suggestions Concerning Office Practice
501	Seltzer	Ab asion of the Face
502	Shambaugh	Practical Office Routine in Otologic Problems
510	Thornell	Intralaryngeal Arytenoidectomy
516	Weille	Nasal & Sinus Surgery in Respiratory Allergy

SCHEDULE OF INDIVIDUAL COURSES — OTOLARYNGOLOGY — Wednesday

Key W-1 — 9:00 a.m. to 10:00 a.m.

Course No.	SPEAKER	SUBJECT
402	Barone	Hay Fever
403	Becker	Plastic Surgery of Protruding Ears
404	Bellucci	Submucous Resection of Nasal Septum
411	Carpenter & Goff	Respiratory and Swallowing Problems in the Newborn
412	Cody	The Elusive Facial Nerve
416	Costen	Mandibular Joint Syndrome
418	Crispell	Allergy in Children
419	Davison	Bronchology & Bacterial Allergy
420	Day	What the Otologist Can Do for Deafness
423	Engler & Hulse	Tuberculosis of the Larynx
431	Goodhill	Management of Tinnitus
437	Hickey	Functional or Organic Nervous Disease
440	Hill	Antro-Alveolar Fistulas
442	Holinger	Pediatric Laryngology
449	Huffman	Zygomatic Fracture-Dislocations
453	Jones, L. T.	Tear Sac Surgery
454	Jordan, R. E.	Allergy in Otology
474	McNally	Labyrinthine Tests
479	Morrison	Laryngeal Paralysis
489	Rawlins	ACTH, Cortisone & the Antihistaminic Drugs
495	Robison	Otitis Media with Effusion
498	Schall	Cancer of the Nose & Sinuses
499	Schuknecht	Carcinoma of the Oral Cavity & Jaws
503	Shuster	Vestibular Apparatus: Clinical Considerations
508	Slaughter	Blood Vessel Tumors of Head & Neck
512	Tremble	Practical Therapeutics in Office Practice

Key W-2 — 10:15 a.m. to 11:15 a.m.

Course No.	SPEAKER	SUBJECT
406	Boyden	Chronic Frontal Sinus Surgery
415	Corgill	Laryngopharyngectomy & Bilateral Dissection
425	Fabricant	Modern Medication of Nose & Sinuses
426	Figi	Tumors of Ear & Mastoid
432	Hallberg	Severe Nosebleed
436	Hedgecock	Advanced Clinical Audiometry
448	Howard	Office Procedures in ENT
450	Ireland	Common Sense Treatment of Office Patients
455	Jordan, V.M.	Sudden Death in the Operating Room
458	Kelemen	Tonsillar Tissue
462	Kos	Clinical Orientation in Management of Dizziness
467	Lempert	Diagnosing Type of Hearing Loss
482	Neivert	Workshop for Deformed Instruments
493	Rinkel	Food Allergy in Otolaryngologic Practice
497	Ryan	Headache
500	Sellers	Headache
505	Simonton	Recruitment of Loudness & Diplacusis Binauralis
506	Singleton	Acute Otitis Media
515	Walsh	Acute & Chronic Otitis Media
518	Wynn	Facial Injuries: Plastic Repair

Key W-3 — 11:30 a.m. to 12:30 p.m.

Course No.	SPEAKER	SUBJECT
401	Ashley	Dust and Other Perennial Inhalant Therapy
405	Bordley	Hearing Disorders in Preschool Children
407	Brandenburg	Understanding the Problem Patient
408	Brodnitz	The Actor & Singer in ENT Practice
409	Canfield	Audiology for Practicing Otologist
417	Craft	Dermatologic Allergy
422	DeWeese	The Dizzy Patient
424	Erich	Fractures of Facial Bones
427	Forman	Problems in Laryngoscopy
433	Hampsey	Respiratory Allergy
441	Hilsinger	Vascular Headaches
444	Holmes	Scars of the Face
446	House	Surgery of Chronically Discharging Ear
452	Jones, A. C.	Helpful Hints for Everyday Practice
457	Keaster	Speech & Hearing in Children Under Five
463	Lake	Chronic Suppurative Otitis Media
464	Lassman	Prescription of Hearing Aids
469	Levin	Management of Defects of Speech & Voice
470	Macgregor	Psychological Hazards of Plastic Surgery of the Face
473	McLaurin	Otitis Externa: Therapy
483	Ogura	Laryngectomy & Neck Dissection
492	Richards	Suggestions Concerning Office Practice
494	Roberts	Medical Otolaryngology
501	Seltzer	Abrasion of the Face
509	Sullivan	Facial Paralysis and Bell's Palsy
510	Thornell	Intralaryngeal Arytenoidectomy

SCHEDULE OF INDIVIDUAL COURSES — OTOLARYNGOLOGY — Thursday

Key Th-1 — 9:00 a.m. to 10:00 a.m.

Course No.	SPEAKER	SUBJECT
403	Becker	Plastic Surgery of Protruding Ears
413	Cohen	Deviated Noses & Their Correction
416	Costen	Mandibular Joint Syndrome
418	Crispell	Allergy in Children
428	Glick	The Sinuses
431	Goodhill	Management of Tinnitus
437	Hickey	Functional or Organic Nervous Disease
439	Hilger	Therapeutic Approaches to the Inner Ear
443	Holinger	Esophageal Diseases in Infants & Children
452	Jones, A. C.	Helpful Hints for Everyday Practice
460	Kemler	Mirror Laryngoscopy
466	LeJeune	Intralaryngeal Surgery
471	Maxwell	Tumors of the Face & Neck in Infancy & Childhood
472	McGannon	Respiratory Allergy
474	McNally	Labyrinthine Tests
475	McQuiston	Endaural Radical Mastoidectomy
478	Moore	Eustachian Tube Problems
483	Ogura	Laryngectomy & Neck Dissection
484	Pastore	A Lump in the Throat
489	Rawlins	ACTH, Cortisone & the Antihistaminic Drugs
493	Rinkel	Food Allergy in Otolaryngologic Practice
503	Shuster	Vestibular Apparatus: Clinical Considerations
504	Simmons	Intranasal Dacryocystorhinostomy
507	Skolnik	Cleft Palate
508	Slaughter	Blood Vessel Tumors of Head & Neck
513	Van Alyea	Embryology of ENT

Key Th-2 — 10:15 a.m. to 11:15 a.m.

Course No.	SPEAKER	SUBJECT
425	Fabricant	Modern Medication of Nose & Sinuses
426	Figi	Tumors of Ear & Mastoid
435	Harris	Poliomyelitis: Respiratory Complications
445	Hosler	Cardiac Arrest
447	House	Atresia of the Ear Canal
455	Jordan, V.M.	Sudden Death in the Operating Room
459	Kelemen	Mechanical Injuries of Hearing Organ
462	Kos	Clinical Orientation in Management of Dizziness
465	Lederer	Diagnostic Approaches & Recent Trends
476	Miller	Larnygeal Emergencies in Infants & Children
482	Neivert	Workshop for Deformed Instruments
485	Pearlman	ENT Complaints in Old Age
487	Proetz	Clinical Aspects of Nasal Respiration
491	Reger	Practical Office Audiometry
495	Robison	Otitis Media with Effusion
496	Rosenberger	Practical Aspects of Childhood Otology
502	Shambaugh	Practical Office Routine in Otologic Problems
506	Singleton	Acute Otitis Media
511	Tingwald	Tumors of the Paranasal Sinuses
512	Tremble	Practical Therapeutics in Office Practice
517	Work	Wide Field Laryngectomy

Key Th-3 — 11:30 a.m. to 12:30 p.m.

Course No.	SPEAKER	SUBJECT
408	Brodnitz	The Actor & Singer in ENT Practice
409	Canfield	Audiology for Practicing Otologist
410	Carhart	Audiogram in Otologic Diagnosis
417	Craft	Dermatologic Allergy
421	Derlacki	Role of Allergy in Deafness
422	DeWeese	The Dizzy Patient
424	Erich	Fractures of Facial Bones
429	Glorig	Terms Used in Audiology
434	Harrill	Bronchography
436	Hedgecock	Advanced Clinical Audiometry
441	Hilsinger	Vascular Headaches
446	House	Surgery of Chronically Discharging Ear
448	Howard	Office Procedures in ENT
451	Johnson	Anesthesia in Adult Tonsillectomies
456	Juers	Hearing Tests
461	Kinney	Acoustic Trauma
464	Lassman	Prescription of Hearing Aids
468	Lempert	Temporal Bone Surgery
473	McLaurin	Otitis Externa: Therapy
477	Missal	Skin Tests in Allergy
479	Morrison	Laryngeal Paralysis
481	Nash	Functional Diseases of Nose
486	Perlman	Serous Otitis
488	Putney	Surgery of Neck Tumors
494	Roberts	Medical Otolaryngology
497	Ryan	Headache
518	Wynn	Facial Injuries: Plastic Repair

SECTION ON INSTRUCTION

ADVANCE ORDER SHEET

All courses cost $2.00 for each period (one hour). Follow instructions explicitly and check for errors in listing before mailing.

Previous to OCTOBER 1

Send order to . . .

WILLIAM L. BENEDICT, M.D., *Executive Secretary-Treasurer*
American Academy of Ophthalmology and Otolaryngology
100 First Avenue Building, Rochester, Minnesota

After OCTOBER 1, mail to . . .

WILLIAM L. BENEDICT, M.D., *Executive Secretary-Treasurer*
American Academy of Ophthalmology and Otolaryngology
c/o Palmer House, Chicago, Illinois

Academy Candidates and Guests May Purchase Tickets at Registration Desk Only

(Over)

ADVANCE ORDER SHEET

ORDERS FILLED ONLY IF CURRENT DUES ARE PAID

NO REFUNDS WILL BE MADE AFTER OCTOBER 9

(Type or Print) Last Name First Name Middle Initial

Office Address

City Zone State

Days to be Present

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

Total Amount Enclosed $_____

SELECTION OF COURSES ON REVERSE SIDE OF THIS BLANK

RECAPITULATION OF GENERAL INSTRUCTIONS

1. Monday, Tuesday, Wednesday, and Thursday are represented by the letters M, T, W, Th. The first period in the morning is represented by figure 1, second period by figure 2 and third period by figure 3. The first period in the afternoon is represented by figure 4, second period by figure 5, and third period by figure 6. All courses in otolaryngology and maxillofacial surgery are presented in the mornings. All courses in ophthalmology are presented in the afternoons.
2. Reservation of instruction tickets in advance of the meeting will be made ONLY for MEMBERS whose 1953 dues have been paid. Academy candidates and guests may make selection of courses ONLY at the General Registration Desk in Chicago.
3. Make check payable to W. L. Benedict, M.D.
4. Mail order promptly to ensure reservation of first choices. If necessary, an attempt will be made to rearrange schedule to include "first choices."

(Over)

SELECTION OF COURSES

PERIOD	FIRST CHOICE		SECOND CHOICE		THIRD CHOICE	
	Course No.	Lecturer	Course No.	Lecturer	Course No.	Lecturer
MON. 4						
P.M. 5						
6						
TUES. 1						
A.M. 2						
3						
P.M. 4						
5						
6						
WED. 1						
A.M. 2						
3						
P.M. 4						
5						
6						
THURS. 1						
A.M. 2						
3						
P.M. 4						
5						
6						

News - - - Notes

AMERICAN ASSOCIATION OF ORTHOPTIC TECHNICIANS

The American Association of Orthoptic Technicians wishes to announce that a Confidential Placement Service has been organized for positions for Certified Orthoptic Technicians. Information regarding available technicians and positions open can be received by writing Mrs. Louisa Wells Kramer, 1779 Massachusetts Ave. N.W., Washington 6, D. C.

AMERICAN BOARD OF OTOLARYNGOLOGY

The American Board of Otolaryngology conducted examinations April 20 to 24, 1953, at the Roosevelt Hotel, New Orleans, La. The examinations will be held again October 5 to 9, 1953, at the Palmer House, Chicago, Ill.

AMERICAN COLLEGE OF ALLERGISTS

The annual conclave of the American College of Allergists was held this year at the Conrad Hilton Hotel in Chicago, April 24 to April 29.

The first four days were devoted to instruction under the tutelage of recognized authorities and the last three to a discussion and reporting of recent advances in the field of allergy by the investigators themselves.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, INC.

The annual meeting of the American Laryngological, Rhinological and Otological Society, Inc., was held on April 28 to 30, 1953, at the Roosevelt Hotel, New Orleans, La.

Dr. Charles A. Thigpen, Montgomery, Ala., was the guest of honor.

INTERNATIONAL CONGRESS OF OTO-NEURO-OPHTHALMOLOGY

The International Congress of Oto-Neuro-Ophthalmology, which will be held in Bologna, Italy, May 3 to 7, 1953, will consider as its main topics (1) dysraphia in oto-neuro-ophthalmology and (2) Meniere's disease. Information may be obtained from the General Secretary, Dr. Giuseppe Cristini, Clinica Oculistica- Policlinico, Bologna, Italy.

LATIN-AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY

The Third Latin-American Congress of Otorhinolaryngology will take place in Caracas February 21 to 25, 1954.

This date has been chosen especially to facilitate the possibility of all Latin-American Colleagues attending the Congress and also the Pan-American Congress of Otorhinolaryngology and Broncho-Esophagology, which will take place in Mexico City beginning February 28, 1954.

CALIFORNIA

The Los Angeles Society of Ophthalmology and Otolaryngology held a dinner meeting on March 23. Taking part in the symposium on "Neoplasms of the Nasopharynx" were Dr. Sidney H. Duboe, who discussed "Malignant Lesions of the Nasopharynx"; Dr. Robert L. Watson, Jr., whose subject was "Mixed Cell Tumor of the Nasopharynx"; Dr. George C. Gay, who read a paper on "Clinical Variations of Carcinoma of the Nasopharynx"; Dr. Norman Jesberg, the subject of whose paper was "Compound Cranial Nerve Defects Associated with Malignant Disease of the Epipharynx"; and Dr. Lewis W. Guiss, who presented a paper on the "General Discussion of Tumors of the Nasopharynx."

At the regular meeting of the Society on April 3, Dr. Stephen J. Popovich, Dr. H. Schuyler Aijian, Dr. Eugene J. Ellis, and Dr. John E. Gilmore took part in the forum on "Diseases of the Vascular System and Eye Manifestations."

ILLINOIS

Dr. Frank B. Walsh, associate professor of ophthalmology at Johns Hopkins University, Baltimore, delivered the Sanford Robinson Gifford Memorial Lecture before the Chicago Ophthalmological So-

ciety on February 14, 1953. The subject of his paper was "Some Aspects of Calcification in Ophthalmology."

The twentieth convention of the Central Illinois Society of Ophthalmology and Otolaryngology met April 10, 11 and 12, 1953, at the Pere Marquette Hotel in Peoria. Papers were read by Dr. James S. Walker, Urbana, Dr. Chevalier L. Jackson, Philadelphia, Dr. Glen Gregory Gibson, Philadelphia, and Dr. Charles Weston, Macomb.

Regular meetings of the Chicago Laryngological and Otological Society were held March 2 and April 6, 1953. Participating in the programs were Dr. Harold F. Schuknecht, Dr. Henry B. Perlman, Dr. James M. Goldinger, Dr. Heinrich G. Kobrak, Dr. E. H. Fell, Dr. Lowell F. Peterson, Dr. Daniel M. Laskin, Dr. Bernard G. Sarnat and Dr. Frank Wojniak.

MISSOURI

The annual out-of-town meeting of the Kansas City Ophthalmology and Otolaryngology Society was held at the E.E.N.T. Hospital, 165 Elks Place, New Orleans, on March 21 and 22, 1953.

NEW YORK

The Alumni Association of the New York Eye and Ear Infirmary met on April 20 to 24, 1953. On April 20 and 21 ophthalmology symposiums were held on "Ocular Therapy," "Diagnostic and Surgical Problems in Detachments," "Corneal Surgery," "Neurologic Problems," "Complications in Ocular Surgery," "Ocular Allergies," "Surgical and Non-Surgical Care of Motor Anomalies," and "Tumors of the Eye and Adnexa," and on April 23 programs relating to otolaryngology were held. The program on April 22 consisted of E.E.N.T. clinical and surgical demonstrations at the New York Eye and Ear Infirmary.

OREGON

The fourth John E. Weeks memorial lecture in ophthalmology was delivered by Dr. Hermann M. Burian, State University of Iowa College of Medicine, before the spring convention of the Oregon Academy of Ophthalmology and Otolaryngology in Portland, March 23 to 27, 1953.

PENNSYLVANIA

The Section on Ophthalmology of the College of Physicians of Philadelphia will meet November 19, 1953, at the College of Physicians Building, Philadelphia. At this meeting the Sixteenth Annual deSchweinitz Lecture will be presented by Dr. Alan C. Woods, Baltimore, on "The Pathogenesis and Treatment of Ocular Tuberculosis."

The Section on Ophthalmology of the College of Physicians of Philadelphia met on March 19 and on April 16 for programs including "Bilateral Metastatic Carcinoma of Uveal Tract with Orbital Extension," by Dr. Carroll R. Mullen, Dr. Perce DeLong and Dr. Charles G. Steinmetz, 3rd, "Acute Hypotony," by Dr. P. Robb McDonald, "Cyclodiathermy," by Dr. Bernard Lachman, "Retrolental Fibroplasia and Its Relationship to Oxygen," by Dr. Robert Bedrossian, and "Chronic, Progressive, External Ophthalmoplegia—A Clinical and Neuropathological Report," by Dr. Gabriel A. Schwarz and Dr. Chan-Noa Liu. Dr. William F. Hughes, Jr., Chicago, the guest speaker at the March 19 meeting, spoke on "Reevaluation of Beta Radiation Therapy and Preliminary Results of Strontium Applicator."

The regular meeting of the Reading Eye, Ear, Nose and Throat Society was held on March 18, 1953, at the Wyomissing Club, Reading, Pa., with approximately forty physicians attending.

Dr. Raymond E. Jordan, associate professor of otology at the University of Pittsburgh Medical School, presented an illustrated lecture on "Chronic Secretory Otitis Media."

Dr. Benjamin F. Souders, moderator, and Dr. E. H. Dengler and Dr. Samuel A. Phillips conducted a study club on the subject of "Helpful Hints in the Treatment of External Diseases of the Eye."

The Ninth Annual Joint Meeting of the Diplomates Association of the Berks County Physicians and the Reading Eye, Ear, Nose and Throat Society was held on February 18, 1953, at the Wyomissing Club, Reading, Pa.

The speaker of the evening was Dr. D. Dwight Grove, associate professor of anes-

thesiology at the Hahnemann Medical College and Hospital, Philadelphia. Dr. Grove presented an illustrated lecture on the subject of "Cardiac Asystole."

Dr. Harold G. Scheie has been appointed Professor of Ophthalmology at the Medical School of the University of Pennsylvania, beginning March 1, 1953.

CANADIAN OPHTHALMOLOGICAL SOCIETY

The sixteenth annual meeting of the Canadian Ophthalmological Society (Societe Canadienne D'Ophtalmologie) is to be held at Minaki Lodge at Minaki, Ontario, on Sunday, June 14, 1953. Reservations should be made at once with Mr. L. S. Wanzel, Manager, Minaki Lodge.

EGYPT

On the occasion of its golden jubilee, the Ophthalmological Society of Egypt, in collaboration with the Regional Office of the World Health Organization, held scientific meetings for a two-week period beginning on February 16, 1953. The scientific meetings were introduced by Prof. Karl D. Lindner of Vienna, who delivered the Soliman Lecture on "Improvement or Cure of Myopia by One or Two Stage Scleral Resection."

Other foreign guests who were invited by the Regional Office to attend the ceremonies, deliver lectures, perform operations, and participate in discussion groups were Dr. Phillips Thygeson, San Jose, California, Dr. David G. Cogan, Boston, Massachusetts, representing the United States, Dr. T. Kieth Lyle of London, England, Prof. Rudolf Thiel from Frankfurt am Main, and Prof. H. N. H. Ehlers from Copenhagen, Denmark.

GERMANY

The annual meeting of the Deutsche Ophthalmologische Gesellschaft Heidelberg will be held at the headquarters of the society on August 31 and September 1 and 2, 1953. Prof. Dr. E. Engelking of Heidelberg, Univ.-Augenklinik, is secretary of the society.

POSITIONS AVAILABLE

Resident, otorhinolaryngological, 3 years. Fourteen hundred bed hospital, teaching program, medical schools affiliation, basic sciences, endoscopy, rhinoplasty, allergy, head and neck surgery. Vacancies July and Januady starting at $2,400. For information, write Dr. David H. Jones, 140 East 54th Street, New York 22, N. Y.

Listings of positions available should be sent to W. L. Benedict, M.D., 100 First Avenue Building, Rochester, Minn., by the fifth of the month preceding publication. They should include (1) type of physician wanted (ophthalmologist or otolaryngologist; diplomate, resident, etc.); (2) type of position to be filled; and (3) whom to write for further information. Unless otherwise requested, listings will be published once only.

The Academy will handle no further correspondence beyond the listing and assume no responsibility. Neither does it endorse or guarantee any of the published listings.

BOOK REVIEW

CLINICAL RADIOLOGY OF EAR, NOSE AND THROAT

Eric Samuel, M.D. (London), F.R.C.S. (England), F.F.R (London), D.M.R.E. (Camb.). 339 pages, with 320 illustrations. New York, Paul B. Hoeber, Inc., 1952.

In this book, an attempt is made to coordinate the clinical knowledge of the ear, nose and throat specialist with the specialty as seen through the eyes of a roentgenologist. The author stresses the importance of cooperation between specialists in the two fields and also the limitations involved. His remarks in the introduction are outstanding for their clarity. The bibliography is extensive and has been carefully prepared; only the best of American and English sources are used.

The volume is a very worth-while presentation which will provide easy and quick reference in every otolaryngologist's practice.

O. ERIK HALLBERG, M.D.

XVII INTERNATIONAL CONGRESS OF OPHTHALMOLOGY

To the Ophthalmologists of America:

We extend to you a most cordial invitation to attend the XVII International Congress of Ophthalmology which will take place in New York, September 12, 13, 14, 15, 16 and 17, 1954, with headquarters at The Waldorf-Astoria.

The XVII International Congress will be the second such meeting to be held in the United States, the previous one being the V Congress which convened in New York in 1876. The First Congress took place in Brussels in 1857; the last one was held in London in 1950.

The meetings of the International Congress of Ophthalmology take place every four years except for interruptions caused by wars. They are conducted under the authority of the International Council of Ophthalmology, the executive body of the International Federation of Ophthalmological Societies, representing most countries in the world. The general aim is to promote the science of ophthalmology throughout the world.

The invitation to the XVII Congress to meet in the United States was the joint action of four national groups: the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, the Association for Research in Ophthalmology, and the American Academy of Ophthalmology and Otolaryngology.

The officers and various committees of the Congress are making every effort to arrange a challenging and interesting scientific program and a pleasant social one. We feel that the great City of New York provides a stimulating atmosphere for such a meeting and we are sure that every ophthalmologist will wish to attend.

Very sincerely yours,

BERNARD SAMUELS, M.D., President
JOHN H. DUNNINGTON, M.D., Vice President
DERRICK VAIL, M.D., Chairman, Executive Committee
WILLIAM L. BENEDICT, M.D., Secretary General

April 28, 1953

DIRECTORY OF OPHTHALMOLOGIC AND OTOLARYNGOLOGIC SOCIETIES

INTERNATIONAL

INTERNATIONAL ASSOCIATION FOR PREVENTION OF BLINDNESS
President: Dr. P. Bailliart, 47 Rue de Bellechasse, Paris, France
Secretary-General: Prof. A. Franceschetti, rue A—Jentzer 22, Geneva, Switzerland

INTERNATIONAL BRONCHO-ESOPHAGOLOGICAL SOCIETY
President: Dr. Fernand Eeman
Secretary: Dr. Chevalier L. Jackson, 1901 Walnut Street, Philadelphia 3, Pa.
Time and Place: Second International Congress of Bronchoesophagology, June 15 and 16, 1953, Albert Plage, Le Zoute, Belgium.

INTERNATIONAL COUNCIL OF OPHTHALMOLOGY
President: Sir Stewart Duke-Elder
Secretary: Prof. Dr. Edward Hartmann, 2, Avenue Ingres, Paris (16e) France

INTERNATIONAL ORGANIZATION AGAINST TRACHOMA
President: Dr. A. F. MacCallan
Secretary: Dr. F. Wibaut, P. C. Hoofstraat 145, Amsterdam, Holland

PAN-AMERICAN ASSOCIATION OF OPHTHALMOLOGY
President: Dr. M. E. Alvaro
Secretary: Dr. Thomas D. Allen, 122 South Michigan Avenue, Chicago 2, Ill.
Time and Place: February 1956. Santiago, Chile

PAN-AMERICAN ASSOCIATION OF OPHTHALMOLOGY, PUERTO RICO CHAPTER
President: Dr. Luis J. Fernandez, Box 2206, San Juan 10, Puerto Rico
Secretary: Dr. P. Fernandez
Place: San Juan

PAN-AMERICAN ASSOCIATION OF OTO-RHINO-LARYNGOLOGY AND BRONCHO-ESOPHAGOLOGY
President: Dr. Justo M. Alonso
Secretary: Dr. Chevalier L. Jackson, 1901 Walnut Street, Philadelphia 3, Pa.
Time and Place: Fourth Pan-American Congress of Oto-Rhino-Laryngology and Broncho-Esophagology. February 28 to March 4, 1954, Mexico City

FOREIGN

THE OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY OF ALBERTA
President: Dr. W. E. Spankie
Secretary: Dr. M. R. Marshall, Wells Pavilion, University Hospital, Edmonton, Alberta, Canada
Time and Place: Spring of 1953 in Edmonton

ALL-INDIA OPHTHALMOLOGICAL SOCIETY
President: Dr. G. Zachariah
Secretaries: Dr. S. N. Cooper and Dr. V. K. Chitnis, Laud Mansion, Queen's Road, Bombay 4, India

ASSOCIACAO MEDICA DO INSTITUTO PENIDO BURNIER
President: Dr. Leoncio de Souza ueiroz
First Secretary: Dr. Milton B. de Toledo
Second Secretary: Dr. Aloisio Af. Ferreira

AUSTRIAN OTOLARYNGOLOGICAL SOCIETY, VIENNA
President: Prof. Dr. E. Schlander
Secretary: Doz. Dr. O. Novotny, Vienna IX, Alserstrasse 4, Austria
Time: Annually

BELGIAN OPHTHALMOLOGIC SOCIETY
President: Dr. L. Weekers
Secretary-General: Dr. M. Appelmans, Avenue Ruelens 179, Louvain
Time and Place: January, June and November. Bruxelles

BOMBAY OPHTHALMOLOGISTS' ASSOCIATION
Chairman: Rotated
Conveners: Dr. S. N. Cooper and Dr. B. D. Telang, Laud Mansion 21, Queen's Road, Bombay 4
Time and Place: 7:30 p.m., third Wednesday of each month. The seven ophthalmic hospitals of Bombay by rotation

BRITISH ASSOCIATION OF OTOLARYNGOLOGISTS
President: Mr. V. E. Negus
Honorary Secretary: Mr. F. C. W. Capps, 45 Lincoln's Inn Fields, London W. C. 2, England

BRITISH MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY
President: Mr. O. G. Morgan
Secretary: Mr. A. G. Cross, 27 Harley Street, London W. 1, England

CENTRO DE ESTUDOS DE OFTALMOLOGIA DE SAO PAULO
President: Dr. Rubens Belfort Mattos
Secretary: Dr. Jose Carlos Gouvea Pacheco, Marconi 34, Sao Paulo

CHENGTU OPHTHALMOLOGICAL SOCIETY
President: Dr. Eugene Chan
Secretary: Dr. D. S. Shen, Eye, Ear, Nose and Throat Hospital, Chengtu, Szechuan, China
Place: Eye, Ear, Nose and Throat Hospital, Chengtu, Szechuan, China

CHINESE OPHTHALMOLOGY SOCIETY
President: Dr. C. H. Chou
Secretary: Dr. F. S. Tsang, 221 Foochow Road, Shanghai

CHINESE OPHTHALMOLOGICAL SOCIETY OF PEKING
President: Dr. G. C. Lin
Secretary: Dr. H. L. Chen, Ophthalmological Dept., Peking University Medical School, Peking
Time: Bimonthly

DEUTSCHE OPHTHALMOLOGISCHE GESELLSCHAFT HEIDELBERG
President: Prof. Dr. med. K. Wessely
Secretary: Prof. Dr. med. E. Engelking, Heidelberg, Universitäts-Augenklinik

FACULTY OF OPHTHALMOLOGISTS
President: Mr. O. M. Duthie
Secretary: Mr. J. H. Doggart, F.R.C.S., 45 Lincoln's Inn Fields, London, W.C. 2, England

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Secretaries of societies are requested to furnish the information necessary to make this list complete and keep it up to date.

FRENCH SOCIETY OF OPHTHALMOLOGY
Secretary-General: Dr. Marcel Kalt, 81 Rue St. Lazare, Paris 9, France
Time and Place: June 20, 1953 and May 16, 1954, Paris

FRENCH SOCIETY OF OTOLARYNGOLOGY
Secretary: Dr. H. Flurin, 19 Rue MacMahon, Paris, France

GERMAN OPHTHALMOLOGICAL SOCIETY
President: Prof. W. Lohlein
Secretary: Prof. E. Engelking, Heidelberg

HUNGARIAN MEDICAL TRADE UNION, SECTION OF OPHTHALMOLOGY
President: Prof. I. Csapody
Secretary: Dr. E. Galla, Krisztina Körut 139, Budapest, Hungary
Time and Place: Bimonthly. Second Eye Clinic, Budapest

HUNGARIAN OPHTHALMOLOGICAL SOCIETY
President: Prof. G. Horay
Assistant Secretary: Dr. Stephen de Grosz, University Eye Hospital, No. 1, Illesucca 15, Budapest

ISRAEL OPHTHALMOLOGICAL SOCIETY
President: Dr. Aryeh Feigenbaum
Secretary: Dr. E. Sinai, 9 Bialik Street, Tel Aviv

MIDLAND OPHTHALMOLOGICAL SOCIETY
President: Dr. F. A. Anderson
Secretaries: Dr. P. Jameson Evans, 51 Calthorpe Road, Edgbaston, Birmingham 15, England
Dr. R. D. Weeden Butler, 18 Highfield Road, Edgbaston, Birmingham 15, England
Place: Birmingham and Midland Eye Hospital, Church Street, Birmingham 3, England

NEDERLANDSCH OOGHEELKUNDIG GEZELSCHAP
President: Prof. Dr. H. M. Dekking
Secretary: Dr. T. A. Vos, Laan v. Meerdervoort 394, Gravenhage

NORTH OF ENGLAND OPHTHALMOLOGICAL SOCIETY
President: Mr. A. McKie Reid
Secretary: Mr. W. M. Muirhead, 70 Upper Hanover Street, Sheffield 3, England
Time and Place: October to May. Manchester, Leeds, Newcastle-on-Tyne, Liverpool, Sheffield and Bradford

SOCIETY OF NORWEGIAN OPHTHALMOLOGISTS
President: Dr. J. C. Holst, Pilestredet 28, Oslo
Secretary: Dr. Thore Lie Thomassen
Place: Rikshospitalets Oeyenklinikk, Oslo

THE NOVA SCOTIA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. H. W. Kirkpatrick
Secretary-Treasurer: Dr. E. I. Glenister, 513 Barrington Street, Halifax, Nova Scotia
Time: Four times yearly at dates to be arranged by the Executive

OPHTHALMOLOGICAL SOCIETY OF AUSTRALIA
President: Dr. A. L. Tostevin
Secretary: Dr. Arnold L. Lance, 27 Commonwealth Street, Sydney, New South Wales
Time and Place: October 12, 1953, Adelaide, South Australia

OPHTHALMOLOGICAL SOCIETY OF COPENHAGEN
President: Prof. Dr. Victor Larsen
Secretary: Dr. S. Ry Andersen, Rigshospitalets oejenafdeling, Copenhagen Oe, Denmark
Place: Rigshospitalets oejenafdeling

OPHTHALMOLOGICAL SOCIETY OF EGYPT
President: Dr. Ahmad Kamel
Honorary Secretary: Dr. Sabri Kamel, 44, Ibrahim Pasha St., Cairo, Egypt
Time and Place: Annual meeting during March. Summer meeting during August. Dar El Hekmah, 42 Kasr El Ainy Street, Cairo, Egypt

OPHTHALMOLOGICAL SOCIETY OF HOSPITAL DE NUESTRA SENORA DE LA LUZ
Chairman: Dr. Manuel J. Icaza y Dublan
Secretary: Dr. Jorge Meyran, Ezequiel Montes 135, México, D. F.
Time and Place: Second Friday of each month. Hospital de Nuestra Senora de la Luz

OPHTHALMOLOGICAL SOCIETY OF NEW ZEALAND
President: Dr. Howard Coverdale
Secretary: Dr. W. J. Hope-Robertson, Kelvin Chambers, 16 The Terrace, Wellington
Time and Place: Annually. Auckland, Wellington, Christchurch and Dunedin alternately

OPHTHALMOLOGICAL SOCIETY OF SOUTH AFRICA
President: Dr. L. Staz
Secretary-Treasurer: Dr. J. Guillaume Louw, 901 Dumbarton House, Adderley Street, Cape Town
Time: Annually

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM
President: Dr. A. MacRae
Honorary Secretaries: Mr. A. G. Leigh and Mr. Harold Ridley, 45 Lincoln's Inn Fields, London

OPHTHALMOLOGISCHE GESELLSCHAFT IN WIEN
President: K. Lindner
Secretary: Ch. Eyb, Wien, IX, Alserstrasse 4

OXFORD OPHTHALMOLOGICAL CONGRESS
Master: Dr. F. A. Anderson
Hon. Secretary and Treasurer: Ian C. Fraser, F.R.C.S., Red Roofs, Kingsland, Shrewsbury

PHILIPPINE OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY
President: Dr. Jesus Eusebio
Secretary-Treasurer: Dr. Jesus Tamesis, Philippine General Hospital, Manila

POLISH OPHTHALMOLOGICAL SOCIETY
President: Prof. Dr. W. Kapuscinski
Secretary: Dr. S. Topolski, Piusa 38, Warsaw, Poland
Time and Place: Every two years—summer. Ophthalmic Clinic, Oczki 6, Warsaw

ROYAL SOCIETY OF MEDICINE, SECTION OF OPHTHALMOLOGY
President: Montague Hine, F.R.C.S.
Secretaries: Arthur Lister, F.R.C.S., 56 Wimpole Street, London, W.1., England
H. E Hobbs, F.R.C.S., 129 Harley Street, London, W.1., England

SAO PAULO SOCIETY OF OPHTHALMOLOGY
President: Dr. Durval Prado
Secretary: Dr. Rubens Belfort Mattos, Rua B. Stapetininga, 29 F-3° andar, Sao Paulo, Brazil

SCOTTISH OPHTHALMOLOGICAL CLUB

President: Dr. E. H. Cameron
Secretary: Dr. John Marshall, 11 Clairmont Gardens, Glasgow, C.3, Scotland
Time and Place: Last Saturday of March and October, Edinburgh and Glasgow, in rotation

SOCIEDAD ARGENTINA DE OFTALMOLOGIA

President: Dr. Jorge Malbran
Secretary: Dr. Jose Maria Roveda, Lezica 4472, Buenos Aires
Time and Place: Third Wednesday of every month. Buenos Aires

SOCIEDAD CHILENA DE OFTALMOLOGIA

President: Dr. Italo Martini
Secretary: Dr. Adrian Araya Costa, Renaca, no. 34, Santiago, Chile

SOCIEDAD COLOMBIANA DE OFTALMOLOGIA Y DE OTORHINOLARINGOLOGIA

President: Dr. Jorge Suarez-Hoyos, Carrera 5a, no. 13-39, Bogota, Colombia
Secretary: Dr. Francisco Arango
Time and Place: Second Tuesday of each month. Club Medico

SOCIEDAD CUBANA DE OFTALMOLOGIA

President: Dr. Gilberto Cepero Garcia
Secretary: Dr. Jose Alfonso, Jr.
Time and Place: First Thursday bi-monthly. Malecon No. 61 Bajos, Havana, Cuba

SOCIEDAD MEXICANA DE OFTALMOLOGIA

President: Dr. Manuel de Rivas Cherif
Secretary: Dr. Emilio Remolina Lopaz, Apartado Postal No. 8112, Mexico D. F., Mexico
Time and Place: 8:30 p.m., first Tuesday of each month, Gral. PRIM 47

SOCIEDAD NICARAGUENSE DE OFTALMOLOGIA

President: Dr. Ricardo Lacayo
Secretary: Dr. Gilberto Cuadra, Clinica Especializada, Managua, D. N., Nicaragua, C. A.

SOCIEDAD DE OFTALMOLOGIA DE CORDOBA

Chairman: Dante J. Yadarola
Secretary: Dr. Alberto Urrets Zavalia (hijo), 27 de Abril 255, Cordoba, Argentina

SOCIEDAD DE OFTALMOLOGIA DE GUADALAJARA

President: Dr. Elias Mendoza Gonzalez
Secretary: Dr. Jose Martin del Campo, Av. Juarez 211, Desp. 314, Guadalajara, Jal.
Place: Edificio Lutencia Despacho 101

SOCIEDAD OFTALMOLOGICA HISPANO AMERICANA

President: Dr. Soria
Secretary: Dr. Costi, 3. Calle Montalban, Madrid

SOCIEDAD DE OFTALMOLOGIA DEL LITORAL

President: Dr. Juan Manuel Vila Ortiz, Cordoba 1915, Rosario, Argentina
Secretary: Dr. Carlos M. Soto
Time and Place: Last Sunday in every month. Rosario

SOCIEDAD OFTALMOLOGICA DE VALPARAISO

President: Prof. Dr. Jean H. Thierry
Secretary-Treasurer: Dr. Jorge Oyarzun O, Hospital de Ojos, Calle Blas, Cuevas, Valparaiso

SOCIEDAD PERUANA DE OTO-RINO-LARINGOLOGIA Y OFTALMOLOGIA

President: Dr. Enrique Cipriani V., Pasaje Olaya 156, Lima, Peru
Secretario General: Dr. Enrique Haro
Secretario de Actas: Dr. Alberto Castillo R.

SOCIEDADE BRASILEIRA DE OFTALMOLOGIA

President: Dr. Paulo C. Pimental
First Secretary: Dr. Pedro Moacyr de Aguiar, Ladeira Santa Thereza 136, Apt. 101, Rio de Janeiro
Second Secretary: Dr. Luiz Enrico Ferreira
Time: Third Friday of every month from April to December

SOCIEDADE DE OFTALMOLOGIA DE MINAS GERAES

President: Dr. Amelio Bonfioli
Secretary: Dr. Mariana Noronha, Pauso Alegre 1150, Belo Horizonte, Est. Minas Geraes

SOCIEDADE DE OFTALMOLOGIA DEL NORTE

President: Dr. Jorge Luis Castillo
Secretary: Dr. Felix Berman, San Lorenzo 345, Tucuman, Argentina
Place: Mendoza 421, Tucuman

SOCIEDADE DE OFTALMOLOGIA E OTO-RHINO-LARYNGOLOGIA DE BAHIA

President: Dr. Theonilo Amorim, Barra Avenida, Bahia, Brazil
Secretary: Dr. Adroaldo de Alencar

SOCIEDADE DE OFTALMOLOGIA E OTO-RINO-LARINGOLOGIA DO RIO GRANDE DO SUL

President: Dr. Mario Araujo Azambuja
First Secretary: Dr. Humberto Lubisco, Rua Donna Laura 45, Porto Alegre, Est., Rio Grande do Su
Second Secretary: Dr. Ivo Kuhl

SOCIEDADE DE OFTALMOLOGIA DE SAO PAULO

President: Dr. Paulo Braga Magalhaes
General Secretary: Dr. Paulo Aranha de Azevedo, Xavier de Toledo 71,1° and., Sao Paulo
First Secretary: Dr. Alfredo Rocco

SOCIEDADE DE OTO-RINO-LARINGOLOGIA DO RIO DE JANIERO

President: Dr. Aloysio Novis
Secretaries: Dr. Rubens Cabral, Rua Paissandu 73, Rio de Janeiro, Brazil
Dr. Mairelles Vieira

SOCIETA OFTALMOLOGICA ITALIANA

President: Prof. Giuseppe Ovio
Secretary: Prof. E. Leonardi, Piazza degli Eroi, 11 Roma, Italy
Place: Roma Piazza degli Eroi 11

SOCIETE BELGE D'OPHTALMOLOGIE

President: Dr. L. Weekers
Secretary-General: Dr. M. Appelmans, 179 avenue Reulens, Louvain, Belgium
Time: Last Sunday of February, June and November

SOCIETE FRANCAISE D'OPHTHALMOLOGIE

Secretaire-général: Dr. Marcel Kalt, 81, rue Saint Lazare, Paris (9) France
Time and Place: June 21 to 25, 1953, Paris

SOCIETE FRANCAISE D'OTO-RHINO-LARYNGOLOGIE

Administrateur: G. Raimond, 17et19, Rue de Buci, Paris (VI.) France

SOCIETY OF SWEDISH OPHTHALMOLOGISTS

President: Prof. S. Larsson
Secretary: Dr. K. O. Granstrom, Sodermalmstorg 4, Stockholm So, Sweden
Time: Annual meeting, beginning of June

SOUTHERN OPHTHALMOLOGICAL SOCIETY, ENGLAND

President: Campbell Shaw, M. R. C. S.
Hon. Secretary and Treasurer: Nigel Cridland, D.M., D.O., 25 Craneswater Park, Southsea, England

NATIONAL

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Frederick C. Cordes
Executive Secretary-Treasurer: Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn
Time and Place: October 11-16, 1953, Chicago

AMERICAN ASSOCIATION OF EYE, EAR, NOSE AND THROAT SOCIETY SECRETARIES

President: Dr. James J. Monahan
Secretary-Treasurer: Dr. Daniel S. DeStio, Highland Building, Pittsburgh 6, Pa.

AMERICAN LARYNGOLOGICAL ASSOCIATION

President: Dr. Louis H. Clerf
Secretary: Dr. Harry P. Schenck, 326 S. 19th Street, Philadelphia 3, Pa.
Time and Place: April 26-27, 1953, The Roosevelt, New Orleans, La.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, INC.

President: Dr. Francis E. LeJeune
Secretary: Dr. C. Stewart Nash, 708 Medical Arts Building, Rochester 7, N. Y.

EASTERN SECTION
Vice-President: Dr. Irl H. Blaisdell
Secretary: Dr. F. Johnson Putney, 2029 Delancey St., Philadelphia 3, Pa.

MIDDLE SECTION
Vice-President: Dr. Henry L. Williams
Secretary: Dr. Walter H. Theobald, 307 North Michigan Avenue, Chicago 1, Ill.

SOUTHERN SECTION:
Vice-President: Dr. W. W. Wilkerson, Jr.
Secretary: Dr. James W. McLaurin, Raymond Building, Baton Rouge 6, La.

WESTERN SECTION:
Vice-President: Dr. Alden H. Miller
Secretary: Dr. Harold Boyd, 1136 West Sixth Street, Los Angeles, Calif.

AMERICAN MEDICAL ASSOCIATION, SCIENTIFIC ASSEMBLY, SECTION ON OPHTHALMOLOGY

Chairman: Dr. Edwin B. Dunphy
Secretary: Dr. Trygve Gundersen, 101 Bay State Road, Boston, Mass.

AMERICAN MEDICAL ASSOCIATION, SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

Chairman: Dr. James Milton Robb
Secretary: Dr. Sam H. Sanders, 1089 Madison Avenue, Memphis 3, Tenn.

AMERICAN OPHTHALMOLOGICAL SOCIETY

President: Dr. Conrad Berens
Secretary-Treasurer: Dr. Maynard C. Wheeler, 30 W. 59th Street, New York 19, N. Y.
Time and Place: May 28-30, 1953, The Homestead, Hot Springs, Va.

AMERICAN OTOLOGICAL SOCIETY

President: Dr. Albert C. Furstenberg
Secretary: Dr. John R. Lindsay, 950 East 59th Street, Chicago 37, Ill.
Time and Place: May 1-2, 1953, Roosevelt Hotel, New Orleans, La.

AMERICAN OTORHINOLOGIC SOCIETY FOR THE ADVANCEMENT OF PLASTIC AND RECONSTRUCTIVE SURGERY

President: Dr. Norman N. Smith
Secretary: Dr. Joseph G. Gilbert, 1404 President Street, Brooklyn 13, N. Y.

AMERICAN SOCIETY OF OPHTHALMOLOGIC AND OTOLARYNGOLOGIC ALLERGY

President: Dr. Kenneth L. Craft
Secretary-Treasurer: Dr. Michael H. Barone, 468 Delaware Ave., Buffalo, N. Y.
Time and Place: Annual meeting, October 16, 1953, Chicago

ASSOCIATION FOR RESEARCH IN OPHTHALMOLOGY, INC.

Chairman: Dr. Walter H. Fink
Secretary-Treasurer: Dr. James H. Allen, 1430 Tulane Avenue, New Orleans, La.

CANADIAN MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY

President: Dr. R. G. C. Kelly
Secretary: Dr. J. Clement McCulloch, 380 Medical Arts Building, Toronto, Ont.

CANADIAN OPHTHALMOLOGICAL SOCIETY

President: Dr. Kenneth B. Johnston
Secretary: Dr. R. G. C. Kelly, 113 St. Clair Avenue W., Toronto 5, Ont., Canada

CANADIAN OTOLARYNGOLOGICAL SOCIETY

President: Dr. Jules Brahy
Secretary: Dr. W. Ross Wright, 361 Regent Street, Fredericton, New Brunswick

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, INC.

President: Mr. Mason H. Bigelow
Secretary: Dr. Franklin M. Foote, 2790 Broadway, New York 19, N. Y.

SOCIETY OF MILITARY OPHTHALMOLOGISTS

President: Col. Austin Lowrey
Secretary-Treasurer: Col. J. H. King, Jr., Walter Reed Army Hospital, Washington 12, D. C.
Time and Place: October, 1953, Walter Reed Army Hospital, Washington 12, D. C.

REGIONAL

ARK-LA-TEX OTO-OPHTHALMIC SOCIETY

President: Dr. Joel A. Wilkinson
Secretary: Dr. Frank L. Bryant, 2622 Greenwood, Shreveport, La.
Time and Place: First Monday of month, September through June. Shreveport Club

HAWAII EYE, EAR, NOSE AND THROAT SOCIETY
Chairman: Dr. Clarence W. Trexler
Secretary: Dr. Tadao Hata, 704 S. King St., Honolulu
Time and Place: Third Thursday of each month, September through May (dinner meetings) 6:30 p.m., Pacific Club, Honolulu

INTER-MOUNTAIN OTO-OPHTHALMOLOGICAL SOCIETY
President: Dr. Robert G. Snow
Secretary-Treasurer: Dr. Whitney J. Haight, 1015 Boston Building, Salt Lake City 1, Utah
Time and Place: Third Monday of each month, September through May. University Club, 136 East South Temple, Salt Lake City

LOUISIANA-MISSISSIPPI OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY
President Dr. W. L. Hughes
Secretary: Dr. Edley H. Jones, 1301 Washington Street, Vicksburg, Miss.
Time and Place: May 11, 1953, Edgewater Gulf Hotel, Edgewater, Miss.

NASSAU OPHTHALMOLOGICAL SOCIETY
President: Dr. Wendell L. Hughes
Secretary: Dr. Ward L. Mould, 131 Fulton Avenue, Hempstead, N. Y.
Time and Place: Fourth Monday in February, April, September and November at 7:30 p.m. at Meadowbrook Hospital, Hempstead, N. Y.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY
President: Dr. Benjamin A. Sachs
Secretary: Dr. Garrett L. Sullivan, 101 Bay State Road, Boston 15, Mass.
Time and Place: Third Wednesday of each month, November through April. Massachusetts Eye and Ear Infirmary

NEW ENGLAND OTO-LARYNGOLOGICAL SOCIETY
President: Dr. Leighton F. Johnson
Secretary-Treasurer: Dr. Burton E. Lovesey, 76 Bay State Road, Boston 15, Mass.
Time and Place: Quarterly. Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston

PACIFIC COAST OTO-OPHTHALMOLOGICAL SOCIETY
President: Dr. C. Allen Dickey
Secretary-Treasurer: Dr. Howard P. House, 1136 West Sixth Street, Los Angeles 14, Calif.
Time and Place: 1953, Los Angeles, Calif.

SAGINAW VALLEY ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. William B. Hubbard
Secretary: Dr. Frank A. Ware, 514 Genesee Bank Bldg., Flint, Mich.
Time and Place: Second Tuesday evening of each month, except summer months. Bancroft Hotel, Saginaw

SIOUX VALLEY EYE AND EAR ACADEMY
President: Dr. James Reeder, Jr.
Secretary-Treasurer: Dr. W. P. Davey, 627-632 Frances Building, Sioux City, Iowa

SOUTHERN MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Dr. Edley H. Jones
Secretary: Dr. F. A. Holden, Medical Arts Building, Baltimore, Md.

TIDEWATER OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY
President: Dr. C. C. Cooley
Secretary: Dr. J. G. Sellers, 413 Medical Arts Building, Norfolk, Va.

WISCONSIN-UPPER MICHIGAN SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. H. D. McEachran
Secretary: Dr. G. L. McCormick, 650 South Central Avenue, Marshfield, Wis.

STATE

ALABAMA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Ralph Clements
Secretary-Treasurer: Dr. David McCoy, 51 Woodward Building, Birmingham, Ala.

ARKANSAS STATE MEDICAL SOCIETY, EYE, EAR, NOSE AND THROAT SECTION
President: Dr. C. G. Hinkle
Secretary: Dr. K. W. Cosgrove, 113 East Capitol Avenue, Little Rock, Ark.

CALIFORNIA MEDICAL ASSOCIATION, EYE, EAR, NOSE AND THROAT SECTION
Chairman: Dr. Robert C. McNaught
Secretary: Dr. Alfred R. Robbins, 1930 Wilshire Blvd., Los Angeles, Calif.

COLORADO OPHTHALMOLOGICAL SOCIETY
President: Dr. Fritz Nelson
Secretary: Dr. James C. Strong, Jr., 550 Metropolitan Building, Denver, Colo.
Time and Place: First Saturday of each month, October through May, University of Colorado School of Medicine, Denver

COLORADO OTOLARYNGOLOGICAL SOCIETY
President; Dr. John Bradley
Secretary: Dr. Robert C. Shattuck, 406 Republic Building, Denver, Colo.
Time and Place: First Saturday of each month, October through May, University of Colorado School of Medicine, Denver

FLORIDA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Charles C. Grace
Secretary-Treasurer: Dr. Carl S. McLemore, 1202 South Kuhl Avenue, Orlando, Fla.

GEORGIA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Stacy C. Howell
Secretary: Dr. Alton V. Hallum, 245 Doctors Building, Atlanta 3, Ga.

INDIANA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. E. L. Van Buskirk
Secretary-Treasurer: Dr. John R. Swan, 23 East Ohio Street, Indianapolis 4, Ind.

IOWA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Byron Merkel
Secretary: Dr. Carl A. Noe, 601-611 Highley Building, Cedar Rapids, Iowa

KANSAS STATE MEDICAL SOCIETY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. N. L. Francis
Secretary: Dr. W. D. Pitman, First National Bank Building, Pratt, Kan.

MASSACHUSETTS MEDICAL SOCIETY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Dr. Edwin B. Dunphy
Secretary: Dr. John E. McKeigue, 403 Commonwealth Avenue, Boston 15, Mass.

MICHIGAN STATE MEDICAL SOCIETY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Dr. J. E. Croushore (Otolaryngology)
Co-Chairman: Dr. J. C. Gemeroy (Ophthalmology)
Secretary: Dr. R. W. Teed, 215 South Main, Ann Arbor, Mich. (Otolaryngology)
Co-Secretary: Dr. F. B. Heckert, 1105 Bank of Lansing Building, Lansing, Mich. (Ophthalmology)

MICHIGAN TRIOLOGICAL SOCIETY
President: Dr. William D. Irwin
Secretary: Dr. V. E. Cortopassi, 324 South Washington Avenue, Saginaw, Mich.
Time: Second Thursday of November, December, March, April and May

MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. K. A. Phelps
Secretary-Treasurer: Dr. R. W Holmen, Lowry Medical Arts Building, St. Paul 2, Minn.
Time and Place: Second Friday of each month, November through May. Alternating, Minnesota Club, St. Paul, and Minneapolis Club, Minneapolis

MONTANA ACADEMY OF OTO-OPHTHALMOLOGY
President: Dr. Fritz D. Hurd
Secretary-Treasurer: Dr. H. L. Casebeer, Pennsylvania Building, 44 West Park Street, Butte, Mont.

NEBRASKA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Maynard A. Wood
Secretary-Treasurer: Dr. Paul L. Peterson, 702 Sharp Building, Lincoln, Neb.

NEW JERSEY SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Henry B. Orton
Secretary: Dr. Albert F. Moriconi, 438 Hamilton Avenue, Trenton 9, N. J.

MEDICAL SOCIETY OF NEW JERSEY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Dr. Robison D. Harley
Secretary: Dr. R. F. Roh, 198 Clinton Avenue, Newark, N. J.

NEW JERSEY OPHTHALMOLOGICAL SOCIETY
President: Dr. Robison D. Harley
Secretary: Dr. Charles E. Jaeckle, 136 Evergreen Place, East Orange, N. J.

NEW MEXICO OPHTHALMOLOGICAL SOCIETY
President: Dr. Howard B. Peck
Secretary-Treasurer: Dr. J. A. Dillahunt, 106 Girard S.E., Albuquerque, N. M.
Time: Meetings four times a year

NORTH CAROLINA EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. MacLean B. Leath
Secretary-Treasurer: Dr. George B. Ferguson, 1110 West Main St., Durham, N. C.
Time and Place: September 14 to 16, 1953, Francis Marion Hotel, Charleston, S. C. (Jointly with South Carolina Society of Ophthalmology and Otolaryngology)

OREGON ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Richard S. Fixott
Secretary: Dr. George E. Chamberlain, 909 Medical Dental Building, Portland 5, Ore.
Time and Place: Third Tuesday each month September through May.

PENNSYLVANIA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Samuel T. Buckman
Secretary: Dr. Daniel S. DeStio, Highland Building, Pittsburgh 6, Pa.

PUERTO RICO MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Luis J. Fernandez
Secretaries: Dr. Ricardo F. Fernandez, P.O. Box 2206, San Juan 10, Puerto Rico (Ophthalmology)
Dr. Carlos E. Munoz MacCormick, P.O. Box 604, San Juan, Puerto Rico (Otolaryngology)
Time and Place: Bimonthly. Puerto Rico Medical Association Building

SOUTH CAROLINA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Clay W. Evatt
Secretary-Treasurer: Dr. Roderick Macdonald, 330 East Main Street, Rock Hill, S. C.
Time and Place: September 14 to 16, 1953, Francis Marion Hotel, Charleston, S. C. (Jointly with North Carolina Eye, Ear, Nose and Throat Society)

TENNESSEE STATE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Roland H. Myers
Secretary-Treasurer: Dr. John T. Bryan, 2105 Hayes Street, Nashville, Tenn.
Time: Annually

TEXAS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. J. Charles Dickson
Secretary: Dr. Lyle Hooker, Esperson Building, Houston, Texas

VIRGINIA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. A. D. Morgan
Secretary-Treasurer: Dr. G. Slaughter Fitz-Hugh, 104 East Market St., Charlottesville, Va.
Time and Place: Spring meeting, May 1953, Hot Springs, Va.

WASHINGTON STATE MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. George A. Hanson
Secretary-Treasurer: Dr. Claude K. Miller, Widby Building, Wenatchee, Wash.

WEST VIRGINIA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Melvin K. McGehee
Secretary-Treasurer: Dr. Frederick C. Reel, Medical Arts Building, Charleston, W. Va.
Time and Place: May 2-3, 1953, Hot Springs, Va. Joint meeting with Virginia Society

LOCAL

ACADEMY OF MEDICINE OF NORTHERN NEW JERSEY, SECTION ON EYE, EAR, NOSE AND THROAT
Chairman: Dr. William F. Krone
Secretary: Dr. Francis J. Grant, 1224 Salem Avenue, Hillside, N. J.
Time and Place: 8:45 p.m., second Monday of the month. The Academy of Medicine, 91 Lincoln Park, South, Newark

AKRON ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. C. R. Anderson
Secretary-Treasurer: Dr. A. L. Peter, 406 Akron Savings and Loan Building, Akron, Ohio
Time and Place: 6:30 p.m., first Monday in January, March, May and November. Akron City Club

ALUMNI ASSOCIATION NEW YORK EYE AND EAR INFIRMARY
President: Dr. W. T. Boland
Secretary-Treasurer: Dr. Hunter Romaine, 111 East 65th Street, New York, N. Y.

ATLANTA EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. F. Phinizy Calhoun, Jr.
Secretary-Treasurer: Dr. James T. King, 384 Peachtree Street N.E., Atlanta 3, Ga.
Time and Place: 7:30 p.m., fourth Monday of each month, October to May. **Academy of Medicine**

BALTIMORE CITY MEDICAL SOCIETY, OPHTHALMOLOGICAL SECTION

Chairman: Dr. M. Elliott Randolph
Secretary-Treasurer: Dr. Abraham Kremen, 2355 Eutaw Place, Baltimore 17, Md.
Time and Place: 8:00 p.m., fourth Thursday of every month October to May. Medical and Chirurgical Faculty, 1211 Cathedral St.

BIRMINGHAM EYE, EAR, NOSE AND THROAT SOCIETY

President: Each member, in alphabetical order.
Secretary: Dr. David A. McCoy, Woodward Building, Birmingham, Ala.
Time and Place: 6:30 p.m., second Tuesday of each month, September through May. **Thomas Jefferson Hotel**

BOSTON CITY HOSPITAL AURAL AND OPHTHALMIC ASSOCIATION

President: Dr. Joseph Nerbonne
Secretary: Dr. Benjamin Riseman, 41 Bay State Road, Boston 15, Mass.

BROOKLYN OPHTHALMOLOGICAL SOCIETY

President: Dr. Daniel K. Kravitz
Secretary-Treasurer: Dr. Louis Freimark, 256 Rochester Avenue, Brooklyn 13, N. Y.
Time and Place: 8 p.m., third Thursday in October, December, February and April. **Medical Society of the County of Kings, 1313 Bedford Avenue**

BUFFALO OPHTHALMOLOGIC CLUB

President: Dr. Milton A. Palmer
Secretary: Dr. Elizabeth P. Olmsted, 568 Lafayette Avenue, Buffalo 22, N. Y.
Time and Place: Second Thursday of each month, October through May. **Park Lane**

CENTRAL ILLINOIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Philip R. McGrath
Secretary-Treasurer: Dr. Alfred G. Schultz, 237 East State Street, Jacksonville, Ill.

CENTRAL NEW YORK EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. Donald E. Moore
Secretary-Treasurer: Dr. Lee R. Stoner, 1100 East Geness Street, Syracuse 10, N.Y.

CHATTANOOGA EYE, EAR, NOSE AND THROAT SOCIETY

Chairman and Secretary: Dr. C. H. Alper, 602-606 Georgia Avenue, Chattanooga, Tenn.
Time and Place: 6:30 p.m., fourth Thursday in each month, October through May. Mountain City Club

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

President: Dr. Lawrence J. Lawson
Secretary-Treasurer: Dr. Stanton A. Friedberg, 122 S. Michigan Avenue, Chicago 3, Ill.

CHICAGO OPHTHALMOLOGICAL SOCIETY

President: Dr. William F. Hughes, Jr.
Secretary-Treasurer: Dr. Gail R. Soper, 636 Church Street, Evanston, Ill.
Time and Place: 7:30 p.m., third Monday of each month, October to May. **Chicago-Illini Union, 715 S. Wood Street**

CINCINNATI OPHTHALMOLOGIC CLUB

Presidium: Dr. Donald J. Lyle, Dr. Karl W. Ascher, Dr. Josef D. Weintraub
Secretary: Dr. Josef D. Weintraub, 715 Provident Bank Building, Seventh and Vine Streets, Cincinnati, Ohio
Time and Place: Second Wednesday night of month, November through May. **University Club, Fourth and Broadway**

CINCINNATI OTOLARYNGOLOGIC SOCIETY

President: Dr. Gerson Lowenthal
Secretary-Treasurer: Dr. Edward T. Juler, 4140 Hamilton Avenue, Cincinnati 23, Ohio
Time and Place: 6:30 on the third Monday of each month except July, August, September and December. **University Club.**

CLEVELAND OPHTHALMOLOGICAL CLUB

President: Dr. Lorand V. Johnson
Secretary-Treasurer: Dr Irwin H. Stolzar, 831 National City Bank Building, Cleveland 14, Ohio
Time and Place: Second Tuesday of November, January, February and April. University Club, Cleveland, Ohio

COLLEGE OF PHYSICIANS OF PHILADELPHIA, SECTION ON OPHTHALMOLOGY

Chairman: Dr. George F. J. Kelly
Clerk: Dr. M. Luther Kauffman, Medical Arts Building, Jenkintown, Pa.
Time and Place: 8:15 p.m., third Thursday of every month, October through April. **College of Physicians Building**

CORPUS CHRISTI EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. Rex E. House
Secretary-Treasurer: Dr. L. David Wright, Thomas-Spann Clinic, 1546 South Brownlee, Corpus Christi, Texas
Time and Place: First Wednesday of each month. La Louisiane

DALLAS ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. W. B. Wilkinson
Secretary: Dr. Claude D. Winborn, Medical Arts Building, Dallas 1, Texas
Time and Place: First Tuesday of each month. Melrose Hotel

DES MOINES ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. J. H. McNamee
Secretary-Treasurer: Dr. H. H. Gurau, 213 Bankers Trust Building, **Des Moines, Iowa**
Time and Place: 6:00 p.m., fourth Monday of each month, September through May. **Des Moines Club**

DETROIT OPHTHALMOLOGICAL CLUB

Secretary-Treasurer: Dr. Frederick A. Lauppe, 1249 David Whitney Building, Detroit 26, Mich.

DETROIT OPHTHALMOLOGICAL SOCIETY

President: Dr. Herman D. Scarney
Secretary: Dr. J. Conrad Gemeroy, 664 Fisher Building, Detroit 2, Mich.
Time and Place: Fourth Thursday of each month, November through April, at L'Aiglon, Fisher Building

DETROIT OTO-LARYNGOLOGICAL SOCIETY

President: Dr. B. F. Glowacki
Secretary-Treasurer: Dr. John R. Birch, 1010 Maccabees Building, Detroit 2, Mich.
Time and Place: Third Wednesday of each month, September to May. **Wayne County Medical Society Building**

SECTION ON OPHTHALMOLOGY OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA

President: Dr. Everett S. Caldemeyer
Secretary-Treasurer: Dr. J. Spencer Dryden, 1835 Eye Street Northwest, Washington 6, D. C.

EASTERN NEW YORK EYE, EAR, NOSE AND THROAT ASSOCIATION
President: Dr. E. Martin Freund
Secretary-Treasurer: Dr. Frank Furlong, 713 Union Street, Schenectady, N. Y.
Time and Place: 8 p.m., first Thursday of month, October to June. Albany, Troy, Schenectady, rotating monthly

FORT WORTH EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. Hal Maxwell
Secretary: Dr. William Skokan, 1708 Medical Arts Building, Fort Worth 2, Texas
Time and Place: 6:30 p.m., first Friday of each month, except July and August. St. Joseph's Hospital

HOUSTON ACADEMY OF MEDICINE, OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION
President: Dr. Lyle Hooker
Secretary: Dr. Claude C. Cody, III, 1304 Walker Avenue, Houston 2, Texas
Time: Second Thursday of each month, October through June

EYE, EAR, NOSE AND THROAT SOCIETY OF HUDSON COUNTY
President: Dr. A. V. Saradarian
Secretary-Treasurer: Dr. A. J. Magee, 921 Bergen Avenue, Jersey City 6, N. J.
Time and Place: Second Monday of each month (September through May), Jersey City Medical Center

INDIANAPOLIS OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SOCIETY
President: Dr. Robert W. Dearmin
Secretary-Treasurer: Dr. Lewis E. Morrison, 603 Hume Mansur Building, Indianapolis 4, Ind.
Time and Place: 6:30 p.m., second Thursday of each month, November to May. Indianapolis Athletic Club

KANSAS CITY SOCIETY OF O. O. R. L.
President: Dr. Winfred Post
Secretary: Dr. Barnard C. Trowbridge, 411 Alameda Road, Kansas City 2, Mo.
Time and Place: Third Thursday of the month, November through May. Hotel President, 14th and Baltimore

LONG BEACH EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. Edmund D. Godwin
Secretary: Dr. James V. Keipp, 110 Pine Avenue, Long Beach 2, Calif.
Time and Place: 6:00 p.m., monthly, September through May. Seaside Memorial Hospital

LOS ANGELES OPHTHALMOLOGICAL SOCIETY
President: Dr. Deane C. Hartman
Secretary: Dr. Daniel B. Esterly, 104 North Madison Avenue, Pasadena 1, Calif.
Time and Place: First Thursday of each month, September through June Los Angeles County Medical Society Building, 1925 Wilshire Boulevard

LOS ANGELES SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Orwyn H. Ellis
Secretary-Treasurer: Dr. Harold Owens, 1052 West Sixth Street, Los Angeles 17, Calif.
Time and Place: 6:00 p.m., fourth Monday of each month, September through May—Otolaryngology Section. 6:00 p.m. first Thursday of each month from September through May—Ophthalmology Section. Los Angeles County Medical Association Building, 1925 Wilshire Boulevard

LOUISVILLE EYE AND EAR SOCIETY
President: Dr. N. H. Burkhead
Secretary-Treasurer: Dr. A. H. Keeney, Heyburn Building, Louisville 2, Ky.
Time and Place: Dinner meetings at 6:30 p.m. on the second Thursdays of alternate months, September through May. Mayflower Hotel, 425 W. Ormsby Street

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA, SECTION ON OPHTHALMOLOGY
President: Dr. Joseph Dessoff
Secretary-Treasurer: Dr. J. Spencer Dryden, 1835 Eye Street Northwest, Washington 6, D. C.
Time: May 5, 1953

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA, SECTION ON OTOLARYNGOLOGY
Chairman: Dr. Irvin Feldman
Secretary: Dr. John Louzan, 1801 Eye Street N. W., Washington 6, D. C.
Time and Place: 7:00 p.m., third Tuesday in October, November, January, March and May. Army and Navy Club, 17th and Farragut Square, N.W.

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Each member, in alphabetical order
Secretary: Dr. Roland H. Myers, 1720 Exchange Building, Memphis, Tenn.
Time and Place: Second Tuesday in each month, September through May. Memphis Eye, Ear, Nose and Throat Hospital

MILWAUKEE OTO-OPHTHALMIC SOCIETY
President: Dr. Gerhard Straus
Secretary-Treasurer: Dr. Erwin E. Grossmann, 238 West Wisconsin Avenue, Milwaukee 3, Wisconsin
Time and Place: 6:00 p.m., fourth Tuesday of each month, October to May, University Club

MONTGOMERY COUNTY MEDICAL SOCIETY, SECTION ON EYE, EAR, NOSE AND THROAT
President: Dr. Robert A. Bruce
Secretary-Treasurer: Dr. L. N. Shroder, 144 West Fourth Street, Greenville, Ohio
Time and Place: First Tuesday of November, February, March and May. Dayton Country Club

MONTREAL OPHTHALMOLOGICAL SOCIETY
President: Dr. J. V. V. Nicholls
Secretary: Dr. R. Charbonneau, 958 Sherbrooke St. E., Montreal, Que., Canada
Time: Second Thursday of October, December, February and April

NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. John W. Harned, Jr.
Secretary-Treasurer: Dr. Herbert Duncan, Bennie Dillon Building, Nashville, Tenn.
Time and Place: Third Monday evening of month, October through May. James Robertson Hotel

NEW YORK ACADEMY OF MEDICINE, SECTION ON OPHTHALMOLOGY
Chairman: Dr. James W. Smith
Secretary: Dr. A. Gerard De Voe, 10 West 59th St., New York, N. Y.
Time and Place: Third Monday of the month, October through May. New York Academy of Medicine

NEW YORK SOCIETY FOR CLINICAL OPHTHALMOLOGY
President: Dr. Abraham L. Kornzweig
Secretary: Dr. Leon H. Ehrlich, 211 Central Park West, New York 24, N. Y.
Time and Place: First Monday of the month, October to May. New York Academy of Medicine

NUECES COUNTY EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. C. N. Meador
Secretary: Dr. Rex C. House, 228 Medical-Dental Building, Corpus Christi, Texas
Time and Place: 7:30 p.m., second Monday of each month, October through May. Dusty's, 1739 South Brownlee Street, Corpus Christie, Texas

OKLAHOMA CITY ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. C. W. McClure
Secretary: Dr. Richard A. Clay, 416 Northwest 13th Street, Oklahoma City, Okla.
Time and Place: First Tuesday of each month. University Hospital, 800 Northeast 13th Street, Oklahoma City

OMAHA EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. Frank J. Klabenes
Secretary-Treasurer: Dr. Frank L. Eagle, 1620 Medical Arts Building, Omaha, Neb.
Time and Place: Dinner meeting third Wednesday monthly, October to May. Omaha Club

PHILADELPHIA COUNTY MEDICAL SOCIETY, EYE SECTION

Chairman: Dr. Alfred Cowan
Secretary: Dr. John W. Deichler, 301 South 21st Street, Philadelphia 3, Pa.
Time: First Thursday of each month, November through April

PHILADELPHIA LARYNGOLOGICAL SOCIETY

President: Dr. Harry P. Schenck
Secretary: Dr. John J. O'Keefe, 255 South 17th Street, Philadelphia 3, Pa.
Time and Place: 8:30 p.m., first Tuesday of month October through May, College of Physicians

PITTSBURGH ACADEMY OF MEDICINE, SECTION ON OPHTHALMOLOGY

President: Dr. John S. Plumer
Secretary: Dr. Samuel D. Evans, 1501-2 Park Building, Pittsburgh 22, Pa.
Time and Place: 8:00 p.m., fourth Monday of each month, October through May. Pittsburgh Academy, 322 North Craig Street

PITTSBURGH OPHTHALMOLOGICAL SOCIETY

President: Dr. Murray F. McCaslin
Secretary: Dr. C. William Weisser, 806 May Building, Pittsburgh 22, Pa.

PITTSBURGH OTOLOGICAL SOCIETY

President: Dr. Daniel S. DeStio
Secretary: Dr. George C. Schein, 634 Washington Road, Pittsburgh, Pa.
Time and Place: Bimonthly

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

President: Dr. Clifton E. Benson
Secretary-Treasurer: Dr. Willard F. Goff, 432 Stimson Building, 1215 Fourth Avenue, Seattle 1, Wash.
Time and Place: Third Tuesday of each month. Medical-Dental Building, Seattle

READING EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. J. Van Dyke Quereau
Secretary: Dr. Benjamin F. Souders, 424 Walnut Street, Reading, Pa.
Time and Place: Third Wednesday of each month, September to July (dinner meetings). Wyomissing Club

RICHMOND, VIRGINIA, EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. J. Warren Montague
Secretary-Treasurer: Dr. Charles N. Romaine, 1001 West Franklin Street, Richmond 20, Va.
Time and Place: First Tuesday of January, March, May and October. Commonwealth Club

ST. LOUIS COUNTY MEDICAL SOCIETY, SECTION ON EYE, EAR, NOSE AND THROAT

Chairman: Dr. Anderson C. Hilding
Secretary: Dr. James P. Tetlie, 626 Medical Arts Building, Duluth, Minn.
Time and Place: 6:00 to 8:00 p.m., preceding the monthly St. Louis County Medical Society meeting St. Mary's Hospital, Duluth

EAR, NOSE AND THROAT CLUB OF ST. LOUIS

Chairman: Dr. James B. Costen
Secretary: Dr. Harry N. Glick, 1504 South Grand Boulevard, St. Louis 4, Mo.
Time and Place: Third Wednesday in November, January, March and May, University Club Building

ST. LOUIS OPHTHALMIC SOCIETY

President: Dr. Edmond B. Alis
Secretary: Dr. Benjamin Milder, 539 North Grand Avenue, St. Louis 3, Mo.
Time and Place: 8:00 p.m., fourth Friday of each month, October through April, except December. Elliott Auditorium, McMillan Hospital

SAN ANTONIO SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. George H. Brunner
Secretary: Dr. Jack B. Lee, 607 New Moore Building, San Antonio, 5, Texas
Time: Second Tuesday of each month, September through May

SAN DIEGO COUNTY OPHTHALMOLOGICAL SOCIETY

President: Dr. Floyd M. Bond
Secretary-Treasurer: Dr. Oscar G. Ravin, 233 A Street, San Diego 1, Calif.
Time and Place: University Club, second Monday of each month

SAN FRANCISCO COUNTY MEDICAL SOCIETY, SECTION ON EYE, EAR, NOSE AND THROAT

Chairman: Dr. W. E. Borley, 655 Sutter Street, San Francisco, Calif.
Secretary: None
Time and Place: Fourth Tuesday of each month, except July, August and December. San Francisco County Medical Society Building

SPOKANE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Phil Greene
Secretary: Dr. Cornelius E. Hagan, Jr., 508 Old National Bank Building, Spokane, Wash.
Time and Place: Fourth Tuesday of each month, September through May. Paulsen Medical and Dental Building

SUPERIOR CALIFORNIA EYE CLUB

President: Dr. Theodore Holstein
Secretary: Dr. John Berg, 436 Medico-Dental Bldg., Sacramento 14, Calif.
Time: Every third Thursday, eight months of the year

TOLEDO EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. Kenneth F. Schoenrock
Secretary: Dr. L. Reed Cranmer, 316 Michigan Street, Toledo 2, Ohio.
Time and Place: Third Tuesday of each month, November through May, Toledo Club

TORONTO ACADEMY OF MEDICINE, SECTION OF OPHTHALMOLOGY

Chairman: Dr. Joseph C. Hill
Secretary: Dr. Harold R. Sniderman, 220 Bloor Street West, Toronto 5, Ont., Canada
Time and Place: Second Monday night of November, January, February and March. Academy of Medicine, Toronto

WESTERN PENNSYLVANIA EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. Joseph W. Raymond
Secretary-Treasurer: Dr. F. E. Murdock, 28½ West Scribner Avenue, DuBois, Pa.
Time: Biannually. Third Thursdays of April and September

WILKES-BARRE OPHTHALMOLOGICAL SOCIETY

President: Dr. Vincent Gallizzi
Secretary: Dr. Samuel T. Buckman, 70 South Franklin Street, Wilkes-Barre, Pa.
Time and Place: Last Tuesday of each month, October through May, except December. Luzerne County Medical Society Library, 130 South Franklin Street

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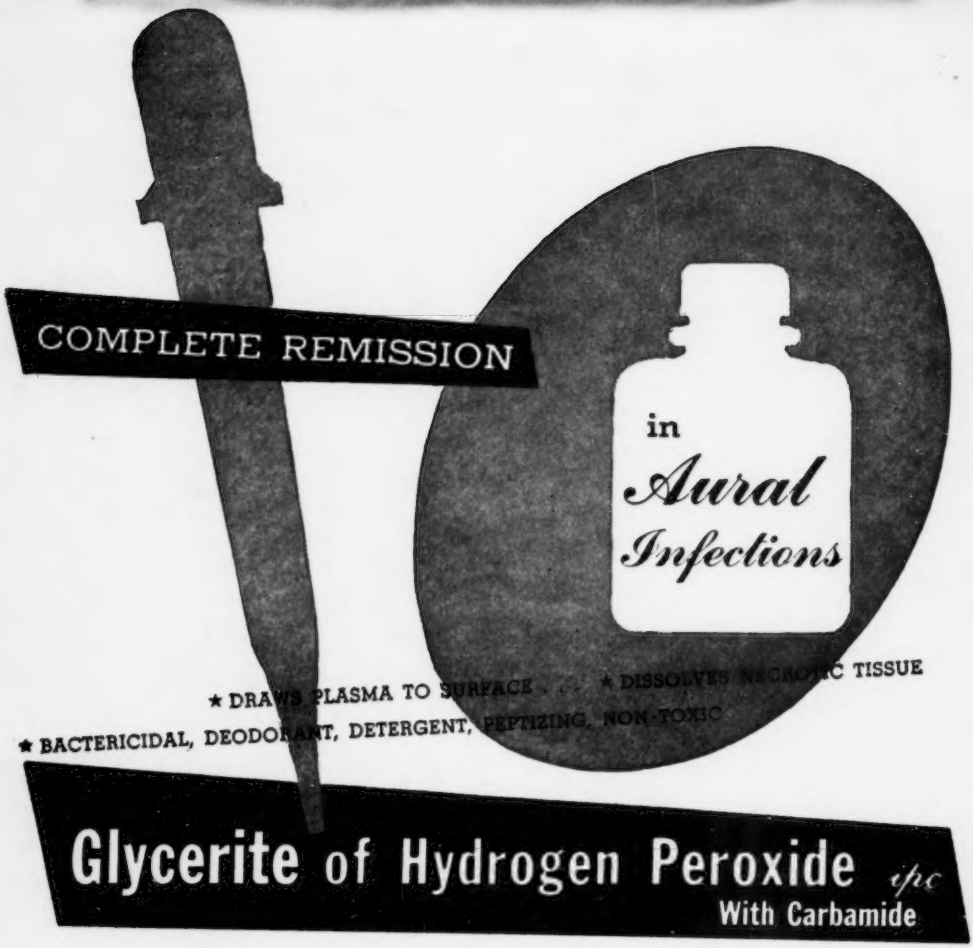

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★ **BIBLIOGRAPHY**

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E., E., N., & T. Mo., 26:27, 1947.
Laryngoscope, 56:556, 1946.
New Eng. J. Med., 234:468, 1946.
Annals of Allergy, 4:33, 1946.
J. A. Ph., A., (Sc. Ed.) 35:304, 1946.

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